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RELATION OF THE HOSPITAL TO THE COMMUNITY*

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To state that the modern hospital is a factor of great importance in the life of every community is to state a fact so well recognized, so oft repeated, that it seems almost an impertinence to say it again. Yet, strange as it may seem, there exist the greatest differences in standards, in fundamental principles, in organization, in scope of work, together with a great deal of ignorance on the part of the public, of physicians and of hospital administrators as to what hospital efficiency means. It might also be said that there is only one factor common to all and that is the uniform purpose of trying to make sick people well.

Consider for a moment the different methods of support for hospitals. In America we have two main types — the semipublic or endowed and the municipal or city hospital. I am speaking of general hospitals and therefore do not include the state hospitals for the insane. In this country it can be said without fear of contradiction that the best hospitals, those that have contributed most up to this time to medical education, to scientific work, and which have been managed with the greatest efficiency in the interests of the patients, have been the endowed hospitals. The municipal hospitals have been for the most part, and are still, interfered with by local politics, medical and otherwise, are insufficiently staffed, insufficiently supported and poorly managed.

In England we find a somewhat similar condition, the majority of the hospitals being supported by the subscription system. In Germany we find quite the reverse, the majority and the best hospitals there being supported by the state or the municipality and used for the broadest purpose of service, in that medical education and research are encouraged and supported everywhere.

In America we find the hospitals providing for both classes of society — the poor who cannot pay, and the more fortunate class, those who can. In England, adequate provision is made only for the poor. Sir William Osler has said that one of the greatest needs in the English hospital system is that provision should be made in the general hospitals whereby the well-to-do may receive treatment as good at least as that afforded the poor. In Germany the condition has, until comparatively recently, been somewhat the same.

We therefore see the widest differences with regard to support and scope of work, in the hospitals of three of the largest countries of the world; and these conditions typify those of practically all other countries.

What is the rational basis of support and what should be the scope of the work? Consider the condition in your own country. The state or city assumes the responsibility of providing for the insane, the defectives and those suffering from tuberculosis. The cities provide for the care of those suffering from contagious diseases and for a limited number of the poor who require treatment in a general hospital. But by far the majority of the poor must get hospital attention in those institutions which are supported by private philanthropy. It is the duty of some one to care for those too poor to provide for themselves. We have not yet accepted the principle that it is the duty of the rich to care for the poor. It would seem therefore that the duty rests with the city or state, or both. Now I am not arguing in favor of abandoning our hospitals which are supported by private funds, not at all, but I do wish to at least try to help to place the responsibility where it belongs. We are too accustomed to our present methods to make such a radical change without involving great sacrifice and great suffering, for on the part of the city and state authorities, our present methods are largely the result of lack of appreciation of the responsibility and the need. Furthermore, our system has worked well, but there is need that the responsibility be recognized and appreciated in order that the burden may not continue to be so unequally divided. That hospitals are obliged to accept state appropriations, made according to the whims of legislators, or according to the influence brought to bear, that they are obliged to accept per capita allowances from the city, which represents frequently not more than one-quarter, and rarely more than one-half the actual cost of caring for a patient, is neither in accordance with the principles of business nor equity.

The cost of hospital administration is increasing each year, and the financial burden for most hospitals is a matter of grave concern. The point which I wish to make is that, in the final analysis, the responsibility does not rest with the private philanthropist; and while it is in every way desirable to continue our system of endowed hospitals and to foster that particular kind of philanthropic spirit, it is at the same time absolutely necessary that the state and municipal authorities recognize their responsibility, recognize that these hospitals are doing a great public service, and when aid is needed, that the per capita allowance should be based on facts and at least approximate the actual cost of the service rendered.

* Chairman's Address, read before the Section on Hospitals at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

What should be the scope of work? By that question is meant, should hospitals provide only for the poor? It is an accepted fact that today a person who is actually ill with any serious illness requiring medical or surgical attention stands a much better chance of recovery if he receives treatment in a hospital. It is also generally conceded that, on the whole, the physician's private hospital, or the nursing home, does not supply the same advantages that can be obtained in the well-organized, thoroughly equipped general hospital. If these facts are accepted, then it follows that if a hospital is intended to serve the fullest needs of the community, it should provide, for those who can afford to pay, facilities at least as good as those furnished to the poor who cannot pay.

We have been considering the hospital in its relation to the community as an agency for the relief of suffering, and as such, whether endowed or supported by the municipality, it is a necessary factor in the preservation of health. The hospital is much more than that. It is an educational factor of great importance, both to the community in which it is located and to the country at large. Many of these hospitals are teaching institutions, furnishing the opportunity for bedside instruction and the practical experience for large numbers of students of medicine, who, when they have received their degree, go out to practice in that or some other community. Every hospital has its resident staff of physicians and surgeons, numbering all the way from one to a hundred, who serve in the hospital from one to several years. Here they perfect themselves, acquire a high degree of skill in diagnosis, treatment and surgical procedure, and in time go out to give the benefit of that skill to some community.

Furthermore, it is in the hospital wards and operating rooms that the senior members of the staff, by the study of large groups of patients, and by the experience gained in operating on large numbers of patients, acquire a skill and technic that has been such an important factor in the progress of medicine and surgery. In the laboratories, too, as a result of careful routine study, or of painstaking experimental work, new facts have been discovered, of the greatest importance in medicine and surgery, and to mankind.

The effect of this group of earnest, skilful workers in any community has a very practical value in the development of public hygiene, better sanitation, better living conditions and a higher plane of existence.

Then there is another most important group—the nurses. Every hospital of any size has its training school for nurses. In this school each year a number of young women are trained to give competent, skilful attention to those who are ill. We now recognize that good nursing is often quite as essential as good medical attention, and is just as often equally responsible for a favorable result. Hospitals turn out annually thousands of trained nurses, who in practicing their profession play an important part in maintaining the health of the community in which they work. The trained nurse is now called on to perform work which is vastly more important and vastly different from what was originally expected of her. In almost every phase of our civic and social life, she is called on to organize, to systematize and to teach, as private nurse, visiting nurse, school nurse, rural nurse, health department nurse, inspector and so on. The nurse is a most necessary and valuable aid to the physician, to the sanitarian and to social service. I cannot refrain from saying that it is high time that the medical profession and the public realize this, and that steps be taken to safeguard this profession from quackery and inefficiency, by establishing proper standards of education, which hospital training schools must meet, and by demanding compulsory registration for the nurse as well as for the physician, the pharmacist, the dentist, the osteopath and the barber. It will come and it will be the more to our credit that we show an intelligent interest and an early interest in bringing about this desirable result.

When we consider the work of the hospital in its broadest sense, we realize that it is not simply a place where sick people are cared for, but it is an educational institution of great value where those things are taught which mean health and happiness.

There is another side to the question, however. Has the hospital fully measured up to its opportunities, has it fully met the needs of the community? I think not; and I wish briefly to speak of a few of the possibilities for still further service. I do not pretend to say that there remain only a few questions to solve. Some hospitals are as nearly perfect as our present ideas can conceive, but many others are far from having attained that standard.

The first question which I wish to present to you is the need of a private or semiprivate service for patients of moderate means. The practice of medicine is now highly specialized. While people with ordinary ailments are satisfactorily treated by the average doctor, as soon as a person becomes seriously ill with any one of a large number of diseases with their usual complications, that person is no longer safe in the hands of the average doctor. If the doctor is intelligent and honest, he calls in some other doctor of larger experience and greater skill. He, in turn, may call in a specialist, who may advise a Roentgen-ray examination, after which still another doctor is consulted. Now, if the patient be a poor man, he may go to the hospital and in the public ward get all of this for nothing, or for a modest charge well within his means. If the patient be a man of large means, he of course has no difficulty. But if the patient is a member of that large class—those in moderate circumstances—earning a salary of from $1,000 to $2,000 per year, with a family to support, he cannot afford to pay the customary fee for such services, either within or outside of the hospital, for his pride prevents him from going into the public ward. What is to be done for him? In my opinion a hospital service between the public ward and the expensive private room, for the benefit of this class, represents a very great need. How shall this be provided? Obviously, it is not the duty of the city to provide such a service, the need of which arises simply because of the patient's pride and lack of funds. Equally obvious is it that funds given strictly for the benefit of the poor should not be diverted to this purpose.

Assuming, therefore, that this service is much needed, it is apparent that it must be provided by special endowment or by the use of a portion at least of the unrestricted funds. Boards of trustees should be educated to appreciate this need. Furthermore, it may safely be said that the amount required would probably not be larger, if any, than that which would be required to support the same number of patients in the public wards. In other words, the difference between the amount paid by the patient and the cost would not be much more in the one instance than in the other. It is taken for granted that while

the patient could and would pay a moderate charge for privacy, he would not be willing, even if allowed to do so, to pay more than the usual ward rate for attention in the public ward. Therefore, the net cost to the hospital would be about the same in either case.

It is a subject which requires the careful consideration of hospital authorities. While I do not think it is a measure which should be adopted in a teaching hospital, because of the complications, it should be considered carefully by those which are not used for teaching, which represent the vast majority.

In line with this is the question of a pay clinic, or dispensary for the same class. The reasons for this are the same as those mentioned above, namely, the expense of getting competent advice when it is required from one or more specialists. There is a large class of patients who are able and willing to pay a moderate fee, but who cannot meet the regular fees of competent specialists. There are many who need such advice and who do not need to enter a hospital for treatment. The free dispensary is not for these, nor will they go to the free clinic and take their turn with large numbers of their less fortunate fellows, and yet they need a place where they can go and get just such advice as can be obtained in the free dispensary. Indeed, the fact that they have gone to the dispensary for advice has, in my opinion, been somewhat responsible for the talk about dispensary abuse. Yet many of these patients would gladly have paid a moderate fee and had no intention of imposing on any one, but were simply trying to get what they needed at a price within their means.

For this class, then some system needs to be devised by which they can get the necessary examination by one, two or three specialists at a fee within their means. Of course the argument against such a clinic will be that it interferes with the private physician. It is true it would interfere with the private physician, but if we recognize the need of such a clinic, we at the same time admit that the average physician does not fill the bill and cannot give the patient proper advice or treatment. Furthermore, it is an argument for fewer physicians better trained.

While a number of free dispensaries are necessary in every large city, there would not be need of more than one of two of these pay clinics. A consideration of the trend of modern medical practice, a superficial study of the desires and perplexities of a large number who seek advice from the hospitals, is sufficient to demonstrate that some provision should be made for those who can pay only moderate fees. Take as an example the clerk who earns from $1,000 to $2,000 per year and has a family to support. He makes both ends meet and that is all. It is for this man, as a representative of this class, that the pay clinic is needed.

The clinic should be organized very much as our efficient free dispensaries are organized. A few carefully chosen men, representing the different branches of medicine and surgery, should constitute the staff. The fees should be such that the patient could get competent advice at a total expense within his means, say for $10, and subsequent treatments or examinations for a small sum, say $1 or $2. The clinic could be run at night, so as not to interfere with the regular hours of the staff members. Such a clinic is urgently needed in every city of considerable size. The chief difficulty will be found in educating the rank and file of physicians to appreciate this need and to give their support. It is time that we gave serious consideration to this subject, for a solution of some sort must and will be found.

Finally, I wish to call your attention to one other problem that needs attention and which represents one of the weak points of our present hospital and social system. All hospitals are discharging, every day, patients whose physical condition requires some changes in the mode of life of the individual. The patient may be a stevedore or a truckman, with a weak heart, or he may be a mechanic who has lost a leg or an arm, or he may be partially paralyzed, or he may be suffering from any one of a number of conditions which make it impossible, or at least inadvisable for him to return to his old employment. These patients are being discharged day after day with advice, good advice to be sure, but which, the chances are, not one patient in ten can carry out unaided. The patient with the weak heart, who has always been a stevedore, and whom we tell not to do any work which involves a physical strain, is bound sooner or later to go back to the only sort of work he is familiar with, unless someone makes it his business to see that he gets employment suitable for him. This class of patients needs assistance simply to find suitable employment, and this aid can be supplied temporarily, by someone in the social service department to whom this special work is delegated. But what of the man who has lost a leg, or an arm, or both, or who is permanently crippled? He is another and more difficult problem, for the only remedy is reeducation. He must be taught some work or trade which, even in his crippled condition, he can do as well as the man who is physically sound; or if that is impossible he should be taught something which will enable him to be, at least, partially self-supporting. To enable the individual to retain his self respect, when otherwise, as a useless member of society, he would lose it, is something well worth while. The hospital takes the patient in, patches him up and does a good job so far as it goes, but when the hospital sends that man out with advice which it is a foregone conclusion the man cannot follow, that is where the process falls short of being complete. Is this completion of the process the problem of the hospital? you may ask. I do not think so, and yet some agency is necessary to complete the work so well done up to this point, and the failure to supply such an agency means a tremendous waste of human material and oftentimes a repetition of work again and again.

I do not think it is a problem of the hospital, because it is a problem with every hospital, and for every hospital to attempt to do this work for its own patients means a great reduplication of work and a great waste of money. In my opinion there should be one central agency for the community, to which all hospitals could refer their patients of this class, with the proper prescription as to work to fit the condition. That agency would have to meet two problems; that of finding suitable employment for those who are simply physically weak, and the second and more difficult problem of teaching the cripples and the patients with the more severe cases of physical defects a new trade.

To solve this problem adequately is a big undertaking, but it is well worth while. It is a community problem, and an agency or institution to meet this need is just as much needed as a hospital. Consider the possibilities, the preservation of the self-respect

and courage of these men and women, the finding for them, or the creation for them, of a useful existence, when unaided they are doomed to lives of idleness, uselessness and despair. It certainly presents great possibilities of increased efficiency in our present system.

We have had examples of the possibilities in the institutions for the blind, Dr. Hall's pottery at Marblehead, and Dr. Jaeger's Hospital of Hope in New York. All of those who have had much to do with hospitals will recognize the need.

I wish further to make the point that this work should not be based on appeals to the sympathy of employers, but on demonstrating or developing the fitness of the individual for the job. Sympathy employers may have, but they cannot be expected to clog their machinery with the unfit. I cannot at this time go into the subject at greater length. I wish, however, to urge the importance of this subject.

These are a few of the problems still awaiting solution and they loom up large. Ten years ago a hospital authority remarked that it seemed to him that most of the hospital problems had been settled. I hardly think we could agree with him, even now, only ten years later, for as I see it, the modern hospital is becoming an increasingly important factor in every community, both in the preservation of health and as an educational institution.

THE ESSENTIAL FACTORS IN THE DIAGNOSIS OF CHRONIC GASTRIC AND DUODENAL ULCERS *

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This review is undertaken to emphasize proved clinical factors and briefly to consider various phases of experimental, clinical and therapeutic advancement in their application to the diagnosis of benign, chronic gastric and duodenal ulcers. Our observations are based on the study of 2,400 cases of gastric and duodenal ulcers operatively demonstrated in the Mayo Clinic from 1900 to 1914, inclusive, with an especial summary of the cases of 1913 and 1914.

DIAGNOSIS

A skilful anamnesis, in the absence of extensive clinical observations or direct roentgenologic evidence of a lesion, is still the most important factor in the differential diagnosis of lesions causing gastric disturbance. With regard to ulcer, characteristic chronicity or remission of symptoms is readily apparent in the case records in over 80 per cent. of all our proved cases. The principles emphasized by Graham[1] since his earliest observations are as effective today as then and are the accepted diagnostic criteria in a large daily experience. Pyloric and duodenal ulcers in which complications are not far advanced invariably manifest periodic exacerbations. Seasonal variations, especially of spring and fall, appear in almost 40 per cent. of all cases. Nervous and physical fatigue, infection and exposure, dietetic indiscretions, toxic intestinal disturbance, etc., are prominent factors influencing recurrences. Between seizures complete relief from symptoms is the rule although frequently in ulcers situated well up along the lesser curvature remission rather than periods of complete relief may occur. In general the greater number of these patients have had symptoms for from five to twenty years, in our experience, few less than one, and a constant average of twelve and one-half years. During the period of attack, pain or distress, variable in character and intensity, is the common and constant symptom in nearly all cases.

Of secondary diagnostic significance are the location, type and area of radiation of the pain. The time of pain and method of its control are of primary importance. The complex of chronicity and periodicity of attacks in which pain or distress and the usual association of symptoms repeated uniformly day by day during the attack and bearing a fairly definite relation to food intake and control is of primary clinical importance in the diagnosis of 80 per cent. of cases of uncomplicated peptic ulcers. In the remaining 20 per cent. this complex may be irregular, atypical or almost entirely absent; or the symptoms may be "mixed," owing to coincidence of disease in contiguous organs, which occurs in about 16 per cent. of all cases of ulcer. It is this group which often taxes the resources of the clinician, but errors in diagnosis do not easily occur if the possibilities are constantly borne in mind especially in cases (1) in which a perforative process or a painful spasm simulates hepatic colic, (2) in cases in which ulcers had become chronic and complicated when the first symptoms appeared, and (3) in cases suggesting a malignant process, the result of an extensive ulcer, hemorrhage, cachexia and perhaps a palpable inflammatory mass.

Clinical differentiation between gastric and duodenal ulcer is extremely difficult and in most instances well-nigh impossible. This has been the opinion of most observers. With great regularity late pain and the nature of hemorrhage in proved gastric ulcer may suggest duodenal lesion. Then, too, not infrequently the earlier onset of pain in some cases of duodenal ulcer suggests gastric lesion. In about 5 per cent. of all ulcers coincident lesions in the stomach and duodenum are noted, an incidence which increases our difficulties. In our experience and in that of many other observers the Roentgen ray is of inestimable value. In this field it has its most practicable application besides occasionally furnishing the first reliable evidence to indicate the presence of ulcer; but too great reliance must not be placed on this; for, valuable as may be the information afforded by the Roentgen examination, it has its limitations. The degree of demonstrability of gastric ulcer is directly concerned with three factors: that is, position, size and depth of the ulcer. The direct sign of irregularity of the gastric contour (niche, accessory pocket) may be wanting in instances in which the ulcer is situated on the anterior wall, high up in the cardia and when it involves the pyloric segment; should it be shallow, "slit-like," it may not be successfully demonstrated.[2] Indirect and auxiliary signs, however, in combination with clinical data, may be helpful in establishing the diagnosis. The strikingly frequent occurrence of bulb deformity or hyperperi-

* From the Mayo Clinic.

* Read before the Section on Practice of Medicine at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

1. Graham, Christopher: Diagnosis Between Duodenal Ulcer and Gallstone Disease, THE JOURNAL A. M. A., Feb. 9, 1907, p. 515; Differential Diagnosis of Diseases Causing Gastric Disturbances, Northwestern Lancet, 1910, xxx, 139.

2. Carman, R. D.: The Diagnosis of Gastric Ulcer by the X-Ray, Read before the Kansas Medical Society, Kansas City, Kan., May 5, 1915.

stalsis with residue in duodenal ulcer is worthy of note from both the point of diagnosis and localization.

The continuous or intermittent presence of altered or fresh blood in the gastric extract, the absence of evidence pointing to gross motor disturbances and the situation of pain and tender point to the left of the median line are strong presumptive evidence of gastric ulcer. Clinically, this general observation can be made: Uncomplicated types of duodenal and pyloric ulcer are invariably clear-cut throughout their life history; the longer the period between intake and pain, the lower the ulcer, as a rule; the more prompt the onset and the briefer the duration of pain, the higher the ulcer. In ulcer of the stomach proper this may not be so clear-cut as in duodenal or pyloric types, nor are the day-by-day symptoms so clearly defined. In ulcers well above the pylorus the symptoms are likely to be continuous, or remissions rather than intervals of complete relief are likely to be noted. The pain is not so often relieved by food; small amounts of food may give relief, while increased amounts may cause distress; more care as to diet is necessary; if bleeding occurs, hematemesis predominates; vomiting plays a more frequent rôle even in the absence of obstruction and affords relief; soda relieves pain when food does not; pain begins earlier, as a rule, often disappearing before the next meal, for obvious reasons, in the absence of stasis or marked hypersecretion. Thus the food-relief is minimized; but pain from one-half hour to two hours after food is quite the rule and is of diagnostic significance. Too much clinical significance cannot be placed on reliable evidence of gross hemorrhage in the presence of other symptoms characteristic of ulcer. This complication, however, occurs in only about 35 per cent. of all chronic gastric and duodenal ulcers. The association of hemorrhage with the ulcer-complex makes for safe diagnosis of ulcer in 95 per cent. of all cases. In 5 per cent. of all ulcers there is a silent bleeding type in which blood is regularly found in the stools but more or less complete absence of other usual clinical symptoms of pain, hyperacidity and food ease. Benign ulcer, unlike cancer, bleeds intermittently. Positive analysis of occult blood in the stool on limited examination was present in about 25 per cent. only of the cases studied. Hemorrhage has been noted in 2 per cent. of all cases of chronic appendicitis associated with marked gastric disturbance, while it is as high as 5 per cent. in chronic cholecystitis associated with the gastric reflex. In these cases the hemorrhage is probably due to primary follicular ulceration of the gastric or duodenal mucous membrane. More extensive observations on the frequency of occult blood, of general blood morphology and its diagnostic significance in ulcer are now under way and will be the subject of future consideration.

Briefly stated, in those organic conditions which most frequently cloud the diagnosis—chronic cholecystitis and cholelithiasis, chronic appendicitis, etc.—we obtain our greatest diagnostic aid from the irregularity of symptoms during the period of attack. This irregularity is chiefly concerned with the time of appearance of pain and the influence of food. Nothing follows in sequence day by day, perhaps due to the fact that the stomach behaves properly unless irritated by the contiguous lesion and this extrinsic lesion is irregular in its influence. Judging from our case records, chronic catarrhal or "strawberry" cholecystitis very perfectly and most frequently simulates the ulcer-complex. The features of chronicity and "spells" (of invariably briefer duration, however) with characteristic pain, hyperacidity and flatulency having some food relation, the absence of colic, icterus and localizing signs are not uncommon. In order to lessen diagnostic error, daily clinical observation, repeated gastric analyses under variable circumstances, examination of the feces and, finally, the therapeutic management based on the well-known principles laid down by Sippy[3] may be necessary. It is unnecessary to comment on the importance of having in mind and recognizing these types of chronic painful dyspepsia most frequently having their origin in these extragastric lesions. Of considerable moment, too, is the frequency of lesions coexistent in the gastroduodenal, biliary, pancreatic or appendiceal systems in which disturbances engendered by one may overshadow or make irregular the symptomatology of the other so that to the conceits of surgery must be left the ultimate diagnosis in too frequent instances.

Test-meal analysis so essential to gastric diagnosis has also its limitations. In the absence of definite evidence of blood, stasis, hypersecretion in the fasting contents, cardiac obstruction, etc., the findings are of value in so far as they are correlated with the clinical and roentgenologic data. They constitute a link, often a decisive one, in the chain of evidence. The instances of normal or subnormal acid value in the presence of a peptic ulcer occur in about 20 per cent. of all cases; on the other hand, hyperacidity and hypersecretion, even stasis of the first degree, are only too frequently associated with functional states, ptosis and extragastric lesions. These conditions would soon lead to diagnostic confusion if too much dependence were placed on a single or even a repeated gastric analysis. Again, on account of purely physical conditions a considerable residue may be overlooked as shown by the contribution of Harmer and Dodd.[4] This disadvantage can be largely overcome by the use of a lavage tube of proper consistency, calibration and ample fenestration such as is now in common use. The researches of Rehfuss[5] and his associates have made us revise our estimate of the normal contents of the fasting stomach. In selected cases the fractional study of gastric digestion by means of the same investigators' tube and methods has proved to be of practical diagnostic value. Hyperacidity is the rule in 60 per cent. of cases of gastric ulcer and hypersecretion, also in ulcers at or near the pylorus. These features, singly or combined, are noted in 75 per cent. of all duodenal ulcers. A considerable hypersecretion of 200 c.c. or more, likewise the recovery of retention contents of our modified Riegel meal after from twelve to fourteen hours invariably argues for a lesion or organic stenosis, especially if the findings are constant. The determination of gastric motility is of diagnostic importance second only to secretory function or disturbance and for obvious reasons the former is of especial interest to roentgenologists.

3. Sippy, Bertram W.: Diseases of the Stomach, Practical Treatment, Musser and Kelly, W. B. Saunders Company, Philadelphia, 1912, iii, 336; Gastric and Duodenal Ulcer: Medical Cure by an Efficient Removal of Gastric Juice Corrosion, THE JOURNAL A. M. A., May 15, 1915, p. 1625.

4. Harmer, T. W., and Dodd, W. J.: Sources of Error in the Use of the Stomach Tube for Diagnosis, Arch. Int. Med., November, 1913, p. 488.

5. Rehfuss, M. E.; Bergeim, O., and Hawk, P. B.: Gastro-Intestinal Studies: I, The Question of the Residuum Found in the Empty Stomach, THE JOURNAL A. M. A., July 4, 1914, p. 11; II, The Fractional Study of Gastric Digestion with a Description of Normal and Pathologic Curves, THE JOURNAL A. M. A., Sept. 12, 1914, p. 909.

Carman and Miller[6] conclude that their bariumized carbohydrate-meal method is a more sensitive test for gastric motility than the modified Riegel meal as commonly used in our clinic; that the modified Haudek double meal method is more informative than tubing after a motor-meal test since the former not only shows delay of evacuation beyond six hours but also yields information as to hypermotile conditions. Their conclusions are based on a comparison of results of both examinations in 950 patients who came to operation. The lesions were as follows: appendix, 125; gallbladder, 311; gastric ulcer, 109; gastric cancer, 137; duodenal ulcer, 268. Of these patients 220 (23.1 per cent.) showed a six-hour barium residue; 131 (13.7 per cent.) had food remnants after fourteen hours or longer. The majority (209, or 90.4 per cent.) of the 220 patients showing a barium retention were found to have cancer, or gastric or duodenal ulcer. They further conclude that a distinct residue after six hours from the barium meal given under prescribed conditions was in 90 per cent. of instances indicative of grave pathology, and usually denoted obstruction at or near the pylorus.

From personal observation we can concede a more sensitive test for motility in this method, especially in case of intermittent or low-grade retention dependent on pylorospasm, incomplete stenosis and on lesions of the accessory digestive system. One may add that the comparison of results between the two methods is hardly fair, principally because of difference in the time element and other features which must be taken into consideration. The motor meal under proper circumstances will continue to be a most practicable index of gastric motility—a fact conceded by eminent roentgenologists and emphasized by clinicians following observations made from the results of both methods. By the latter method one has the additional advantage of being able at the same time to estimate the secretory function of the stomach.

STATISTICAL STUDY

Exclusive of those cases in which a consistent diagnosis of gastric or duodenal ulcer was made and medically treated, there were 1,078 cases operatively demonstrated during the years 1913 and 1914. Of these, 264 were gastric and 814 were duodenal. Coexistent lesions in both organs were noted in 44, or 4 per cent. The average ratio of gastric to duodenal ulcers is well shown in this series, about 1 to 3, that is, 75 per cent. of the ulcers were duodenal. Of the 264 cases of gastric ulcer, 171 occurred in males and 93 in females. The average ages were 47 and 44.5 years, respectively. The average duration of symptoms was 9.8 years. In about 80 per cent. the course was intermittent, free intervals alternating with "spells" of variable duration, regular (40 per cent.) or irregular (49.5 per cent.) in frequency. In 50 per cent. the complaint was continuous and progressive over periods of from several months to several years prior to operation. Irrespective of the situation of the ulcer, pain appeared within 4 hours after meals in 85 per cent. of the cases; in over 30 per cent. it was present within 2 hours, in 55 per cent. within 3 hours, regarded as constant in 3.8 per cent. and irregular in 3.4 per cent. Definite nocturnal pain only occurred in 6 cases, or 2 per cent. Pain was controlled by food or alkalies, or both, in 180 cases. The majority of these (84 per cent.) showed relief after food, while alkalies alone gave relief in 15.6 per cent. There was a fairly definite history of bleeding (hematemesis or melena) in 73 cases, or 27.6 per cent. of this group; about 41 per cent. had hematemesis only, 15 per cent. melena, while both hematemesis and melena were mentioned in 44 per cent.

Gastric analyses were carried out in 255 cases; 38 per cent. of these showed presence of altered blood in the extract. Gross retention was evident in 33.3 per cent. The average total acidity was 54; the average hydrochloric acid was 42. In 18 per cent. the acid values were normal or below. The absence of free hydrochloric acid was shown in 13 cases. Under such a circumstance the possibility of carcinoma, syphilis or associated disease was evident. Five of these patients have since died from malignancy, three now apparently show malignancy; in the others the advanced age associated with considerable fresh blood in the extract, gallbladder disease or other pathologic lesions explained the achlorhydria.

The generally accepted complex of ulcer was more or less definitely present in 81 per cent. of the 212 cases; irregular but suggestive in 6.8 per cent.; classified as irregular in 5.3 per cent. In the remaining 7 per cent. the picture was atypical or the record was incomplete. A primary diagnosis of gastric ulcer was made in 174 cases, or 66 per cent.; an alternative one in 21 cases (8 per cent.). Duodenal ulcer was the primary diagnosis in 47 cases (27 per cent.). The Roentgen ray gave definite assistance in 65 per cent. of the 113 cases examined in this series.

The situation of the ulcers was as follows: the lesser curvature in 167 cases, or 63 per cent.; the pylorus, 35, or 13 per cent.; total ulcers at or near the pylorus, 87, or 33 per cent.; posterior wall, 27, or 10 per cent.; anterior wall 6, or 2 per cent.; 2 gastrojejunal ulcers secondary to gastro-enterostomy. Multiple ulcers were noted in 15 cases, or 5.6 per cent.

The complications were: advanced cicatricial pyloric stenosis, 11.7 per cent.; evidence of perforation, 28 per cent.; perigastritis with adhesions to neighboring structures, 28 per cent.; questionable malignancy, 11.7 per cent.; appendiceal disease, 33.7 per cent. In less than 25 per cent. of all cases was there no complicating factor, a fact which illustrates the advanced stage of the process at the time of first examination.

Of 814 cases of duodenal ulcers 628 (77 per cent.) were males and 186 (22.8 per cent.) were females. This characteristic disproportion in sex incidence Wilkie[7] has probably explained on an anatomic basis. The average age was 43 years and the average duration of symptoms was over twelve years. The clinical course was intermittent in 95 per cent. of all cases, and periodic in 50 per cent. Continuous preoperative complaint of variable duration was noted in 26 per cent. In more than 85 per cent. the pain appeared in from two to five hours after taking food; in the remainder it appeared within two hours. Nocturnal pain only was given in 6 cases (7 per cent.). Definite relief by food was noted in 67 and partial or irregular relief in an additional 15 per cent. Relief by neutralization was present in 39 per cent. Hemorrhage was

6. Carman, R. D., and Miller, Albert: The Roentgenologic Determination of Gastric Motility with a Comparison of the Results Obtained in a Series of Cases Examined Both by the Roentgen Ray and the Test-Meal, Arch. Int. Med., to be published.

7. Wilkie, D. P. R.: Observations on the Pathology and Etiology of Duodenal Ulcers, Edinburgh Med. Jour., 1914, xiii, 196.

reported in 208 cases (25 per cent.) and was classified: melena, 8.8 per cent.; hematemesis, 6 per cent.; both melena and hematemesis, 10.5 per cent. The acid values averaged 20 per cent. higher than in gastric ulcer and in only 7 per cent. were they below the accepted normal standard.

A primary clinical diagnosis was made in 543 cases (66.7 per cent.) and an alternative one in 67 cases; that of primary gastric ulcer in 88 cases (10.8 per cent.). This totaled 85.7 per cent., the usual average in all the series recently studied. Of 251 cases in which the tentative diagnosis of gallbladder disease was also made, 51 (20 per cent.) showed this disease present and 51 ulcers (22.3 per cent.) were shown to be chronic perforating. Reviewing the case histories, the ulcer complex was fairly regular in 71 per cent., suggestive in 7.2 per cent., and irregular in 13.2 per cent.

At operation advanced pyloric stenosis was shown in 251 cases (30.8 per cent.); perforation in 26.8 per cent.; periduodenal inflammatory disease in 23.5 per cent. Associated disease in the appendix occurred in 48 per cent.; in the gallbladder in 9.7 per cent.

A more detailed comparative study of the statistical end-results in these two groups serves to bring out the salient differential clinical features as previously mentioned.

ABSTRACT OF DISCUSSION

DR. J. N. HALL, Denver: We have the very great advantage of knowing what we are discussing, since the diagnosis has been proved in every case. There is perhaps no other common disease so frequently and so closely mimicked in its symptomatology by several other diseases as is peptic ulcer. We have all seen patients treated for twenty years for gastric ulcer, but cured by the removal of the chronically inflamed appendix, with no ulcer present. I have recently had one of Ewald's patients so cured, and it is doubtful if he is surpassed in diagnostic ability along this line by anyone in the world. Chronic inflammation of the gallbladder, chronic gastritis of the hyperacid type, small omental hernias and even the tabetic crises, are other common causes of confusion in diagnosis. Whenever ulcer is suggested but the history is atypical, the evidence as to the possible presence of chronic appendicitis should be reviewed, for such a condition will often be found. I should personally lay more stress on the search for unilateral muscular rigidity, which is probably of more decisive value as evidence of a definite structural lesion than pain and tenderness combined. In no procedure is the possession of an educated touch more imperative. The appearance in the anamnesis of jaundice and biliary colic has been the cause of diagnostic defeat in many cases through failure to recognize that in duodenal ulcer the patency of the common duct may be compromised, either mechanically or through an infective process. We should doubtless give the appendix more credit than it now receives as a prime cause of peptic ulcer, since the commonly induced hyperacidity in chronic appendicitis is probably a potent factor. It is interesting to note that the essayist found the appendix inflamed in 30 or 40 per cent. of the cases. If the ulcer does not heal promptly under proper medical measures, operation should certainly be advised. One comforting thought under these circumstances is that we shall save more than enough lives through the finding of unsuspected cancer to balance the mortality rate. The fact that many ulcers may be found by opening the stomach or duodenum when they would have escaped detection otherwise, should be given due consideration. There are so many chances of finding cancer, pyloric or duodenal obstruction, serious adhesions, hourglass deformity, etc., that we practically always find more advanced pathologic changes than we anticipated. The acquirement of a drug habit or the development of arteriosclerosis, neurasthenic features or tuberculosis from the faulty nourishment must not be overlooked.

DR. MAX EINHORN, New York: I have mentioned on another occasion the reason for the discrepancy between the views of the Mayos regarding the frequency of ulcer and the views of other clinicians. The Mayos believe ulcer is two or three times as frequent as cancer. I have no doubt their work supports that opinion. But there is a difference in the material that comes to the surgeon and the material which comes to the clinician. Say I have twenty cases of ulcer, probably only one of those will undergo operation. The cases which undergo operation belong to those in which there is food stagnation, or the lesion is near the pylorus, and that is why the surgeons find duodenal ulcer so frequently. If we could open up all the ulcer cases, we would probably find ulcer of the stomach much more frequent than ulcer of the duodenum. As to differential diagnosis, I agree with Dr. Eusterman, that from clinical symptoms we can sometimes make a diagnosis, but usually we cannot do so. In the great majority of cases we will be able to make a more definite diagnosis on careful observation of the cases, especially as to the location of the ulcers. I have several cases in which the lesion was shown to be in the duodenum, whereas the symptoms would indicate gallbladder trouble. There are of course cases in which the two conditions are present—duodenal ulcer and gallstones. This sometimes can be found out before operation by careful examination. The duodenal tube and the examination of the bile and duodenal contents may furnish a great deal of information as to the presence of gallbladder trouble. It has been my experience that in gallbladder disease the bile is not as clear as it should be when we take it out fresh from the duodenum.

DR. J. A. LICHTY, Pittsburgh: An essential factor under this subject is the differentiation between the acute and chronic gastric and duodenal ulcers. The differences of opinion between the internists and the surgeons hinge largely on the failure to make this differentiation. The difference is just as great as between an acute ulcerative endocarditis and an old mitral lesion in a compensating heart. If we can differentiate definitely between the acute gastric and duodenal ulcer cases and the chronic cases with their consequent deformity or disturbance of function, we can very easily decide what are medical and what are surgical cases. A year ago before this section Dr. Joslin of Boston spoke of his results in gastric and duodenal ulcers. He found that most of his patients did not come to the internist until they had their disease six years, and they did not go to the surgeon until they had their disease ten years. It is useless for the physician and surgeon to accuse one another of neglect, etc., when in six years so much damage may have occurred that neither the physician nor the surgeon can expect satisfactory results.

The Reward of Scientific Study.—The student does not study Nature because that study is useful, but because it gives him pleasure, and it gives him pleasure because Nature is beautiful; if it were not beautiful it would not be worth knowing and life would not be worth living. I am not speaking, be it understood, of the beauty of its outward appearance—not that I despise it, far from it, but it has nothing to do with science: I mean that more intimate beauty which depends on the harmony in the order of the component parts of Nature. This is the beauty which a pure intelligence can appreciate and which gives substance and form to the scintillating impressions that charm our senses. Without this intellectual support the beauty of the fugitive dreams inspired by sensual impressions could only be imperfect, because it would be indecisive and always vanishing. It is this intellectual and self-sufficing beauty, perhaps more than the future welfare of humanity, that impels the scientific man to condemn himself to long and tedious studies.—H. Poincaré.

MEDICAL ASPECTS OF OPEN AIR SCHOOLS *

SHERMAN C. KINGSLEY
Director of the Elizabeth McCormick Memorial Fund
CHICAGO

Medical examination of employees is becoming the practice in the industries of our country. This has been found necessary by business men, first, to conserve the health and welfare of the individual, and second, to promote efficiency. Safety first methods and principles are becoming matters of first importance in the life of our country. Shop sanitation and proper working conditions are requisites in a first class business organization.

There are 20,000,000 schoolchildren in the United States. These boys and girls spend 11,415 years in the schoolrooms of the land every school day. This means a total every school year of 2,283,000 years. School attendance is compulsory.

Any business responsible for the expenditure of this amount of time would find it necessary to apply efficiency tests to be sure that working conditions were satisfactory.

Anyone who has visited schoolrooms and is aware of the enormous amount of time required from the boys and girls of the land cannot help wondering how much time is lost through drowsiness, inattention and half asphyxiation due to badly ventilated and overheated schoolrooms. Government in the United States concerns itself with the direction of the individual perhaps less than any other great nation of the world.

The public school affords our one most conspicuous exception to this rule. We compel the boys and girls to go into the schoolhouse and occupy school seats. We keep each one in the presence of the teacher and under the direction and supervision of the school authorities for a period of six to eight years, at least. Our theory is that each boy or girl reared in the United States should have at least a grammar school education. We now know that less than one-half ever finish the grammar school.

Through the work of our juvenile courts, settlements and vocational guidance bureaus, our children societies and other agents dealing with boys and girls, we are beginning to understand some of the pressing problems of child life.

Health inspection in public schools shows that 12,000,000 of our 20,000,000 schoolchildren have physical defects serious enough to interfere with school progress. Careful study in many cities further shows that from 2 per cent. to 10 per cent. of the total school population has physical defects so serious as to render school experience practically useless and to render it unprofitable to spend public money trying to educate them unless something is done to correct physical defects.

Advocates of the open air school believe that the time to spend time and money on the individual is when he is young and when such effort and expenditure will result in benefits which will accrue to the individual, and not wait until it is necessary to deal with them as chronic invalids or as finished dependents.

Open air school advocates believe that 100 per cent. of the schoolchildren should have their fresh air and hygienic rights. In many parts of the country there is no reason why all schools should not be open air schools all the year around, because the climate affords no serious obstacle.

In other parts of the country, the winter months constitute a problem, but for the major portion of the year, even in the colder latitudes, all schools can have open air conditions. Even in the winter months, open air conditions can be much more nearly approached through the periodic opening of windows to let in the fresh air.

The debilitated child affords a special problem and, as was said before, it is estimated that from 2 per cent. to 10 per cent. of the schoolchildren are of this type, and this would mean somewhere between 400,000 and 2,000,000 such children in the United States.

The Elizabeth McCormick Memorial Fund of Chicago has made the open air school a special feature of its work. In the school year 1913-1914, there were twenty open air schools in Chicago with an attendance of over 600 children. In the case of 590 of these children, fairly complete records were kept.

The Board of Education furnished teachers and school equipment, and the Municipal Tuberculosis Sanitarium of Chicago cooperated in furnishing nursing service and in providing food.

The Elizabeth McCormick Memorial Fund employed special physicians, furnished clothing and other service necessary to the conduct of the schools. The children selected were of the undernourished, anemic and tuberculous type, and came mainly from the congested districts of Chicago. The average size family represented by the children was 6.15. Average number of rooms 4 plus. There was an average of 1.8 tuberculous members in each family represented by these children. The average rent was a little over $12 per month. The average income in the families represented by the children was $7.02 per individual per month.

This study of income was made in the latter half of the year 1913-1914, when industrial conditions in Chicago were normal. This income is a little more than half the standard established by the Juvenile Court of Chicago as a minimum on which a family of the size represented by these children can live and maintain health and efficiency. The figure set by the Juvenile Court is $12.60 per individual per month for such families.

Seventy-five per cent. of the children were diagnosed as tuberculous, meaning bones, joints, glands, etc.; 20 per cent. were suffering from anemia, and malnutrition; 5 per cent. were suffering from other defects, bronchitis, heart disease, etc. In addition, 188 had diseased tonsils; 165 had adenoids; 466 decayed teeth; 152 defective eyes, and then there were other minor defects. The families of a majority of these children were known to the clinics of the Municipal Tuberculosis Sanitarium. There were many other unclassified defects. In addition to these conditions, hours of retiring, irregular meals, conditions of sanitation and cleanliness in a majority of the homes were unsatisfactory.

First hand acquaintance with these children throws strong light on the reasons why at least some of our children fall out of school at an early age and why they are so illy-prepared physically and mentally for the duties of life. They help us to understand why our general theory of a grammar school education for all the boys and girls reared in this country is not

* Read before the Section on Preventive Medicine and Public Health at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

being made effective, and why more than half of them never attain this standard, and why such large numbers leave school with only fourth, fifth and sixth grade preparation.

Advocates of the open air school state that a thorough knowledge of each individual child is necessary and that this knowledge should recognize the child's physical as well as his mental individuality.

TABLE 1.—WEIGHTS (BOYS) IN COMPARISON WITH NORMALS

Age	No. of Boys	Actual Average Gains Per Month	Normal Gains According to		
			Holt	Ch. Bd. Ed.	Boas
7	6	0.37	0.34	0.32	0.35
8	13	0.29	0.47	0.38	0.41
9	21	0.37	0.43	0.43	0.43
10	24	0.41	0.51	0.40	0.48
11	28	0.5	0.45	0.43	0.44
12	18	0.61	0.58	0.59	0.51
13	29	0.7	0.66	0.6	0.65
14	14	0.91	0.85	0.81	0.86
15	9	1.09	0.9	0.91	1.01
16	3	0.52	1.00	0.90	1.13

In order that careful medical work might be done, the Elizabeth McCormick Memorial Fund, for several years, has paid the physicians in the Chicago open air schools. This enables them to give the amount of time that is necessary adequately to deal with these children. The physicians have spent an average of about four hours a week on each of the nineteen schools. They find that it requires about a half hour to give each child a careful examination, and such examinations are made on admission, discharge, and once or twice during the year.

In addition, there is the daily running supervision which takes care of any special ailments, sees that physical defects are followed up and corrected, that children having elevated temperatures and who are indisposed, should be placed on rest. The nursing service which is furnished by the Municipal Sanitarium takes about an hour and a half a day of the nurse's time for each school. The nurse inspects the children daily, supervising taking of temperatures, taking care of any little injuries or physical needs, and

TABLE 2.—WEIGHTS OF GIRLS IN COMPARISON WITH NORMALS

Age	No. of Girls	Actual Average Gains Per Month	Normal Gains According to		
			Holt	Ch. Bd. Ed.	Boas
7	4	0.24	0.33	0.36	0.35
8	10	0.45	0.38	0.35	0.40
9	27	0.44	0.36	0.39	0.40
10	20	0.44	0.52	0.44	0.45
11	28	0.55	0.5	0.49	0.55
12	33	0.65	0.86	0.65	0.76
13	21	1.02	0.77	0.80	0.83
14	22	0.85	0.71	0.90	0.80
15	4	0.52	0.65	0.74	0.70

visits the homes and helps to get the best possible cooperation with the school in the child's behalf.

Then there is a small number of children to each teacher. This makes it possible for her to know her children, and when she understands home conditions, physical needs and has the cooperation of nurses, social workers, juvenile court officers and other social forces of the community, she gets an understanding of her children that she perhaps never had before.

To begin with, she is usually chosen for her interest in the work and her general social as well as teaching sense. The children study under open air conditions. They have as much sunshine as possible and their work is made as varied and interesting as conditions will permit.

In some of the schools they have a daily shower bath, daily feeding and a rest period after the midday meal. The aim is to "weave all these features into a process of education and the hygienic way of life." Results are almost uniformly gratifying.

Children gain in weight, they increase in alertness, in spirit and interest and make better intellectual progress.

Improvement is also shown in the hemoglobin tests. The average gain in weight for these children in ten months was 4.95 pounds. This approximates closely what the gains of normal children of the same age and sex should be and is shown in the accompanying tables.

Tables 1 and 2 show that about half the children gain as much (or more) as normal children of the same age and sex, and about half gain a little less.

The following tables show the school progress of these children for their year in the open air school and the previous record of the same children in regular rooms.

TABLE 3.—SCHOOL PROGRESS OF 522 CHILDREN IN CHICAGO OPEN AIR SCHOOLS, SCHOOL YEAR 1913-14

1 child made three grades in this school year.
12 children made two grades this school year.
9 children made one and one-half grades this school year.
387 children made one grade in this school year.
113 children failed to make one grade in this school year.

TABLE 4.—SCHOOL PROGRESS OF 488* OF THESE CHILDREN PRIOR TO SCHOOL YEAR 1913-14 BASED ON THESE FACTS AND ASSUMPTIONS

First—The age and grade of each of the pupils was taken at the beginning of the school year 1913. Second—We assume that according to usual standards each child entered school between 6 and 7 years of age; that he continued in school, and that he should have made one grade each school year.

22	children averaged	0.50 to 1	year	to a grade.
107	children averaged	1	year	to a grade.
172	children averaged	1 to 1.50	years	to a grade.
128	children averaged	1.50 to 2	years	to a grade.
18	children averaged	2 to 2.50	years	to a grade.
22	children averaged	2.50 to 3	years	to a grade.
2	children averaged	3.50	years	to a grade.
9	children averaged	4	years	to a grade.
5	children averaged	5	years	to a grade.
1	child averaged	6	years	to a grade.
2	children averaged	7	years	to a grade.

* Nine of the 522 children entered school in the school year 1913-1914; twenty-five had not completed one grade at the end of the school year 1912-1913, and therefore were not included in this table.

The open air school movement is spreading rapidly over the country. There is a deep interest in the physical welfare of schoolchildren, and it is the conviction of part of our people that the time to serve these children is when they are in the public schools; that it is not good business to allow them to sit for six or eight years with handicaps and defects which are preventing them from receiving the thing which the school wants to give.

New York City has 250 open window classes with the same number of children in each class as in the regular schools, and the promoters say the results are better than in closed rooms.

New York also has twenty-five classes for anemic children and in these classes there are twenty-five children, and here again they say the results are bet-

ter than when these children go to the usual closed room. There is no feeding or rest period in these classes.

Many other cities have open window classes. In California and many other localities, the movement is spreading rapidly.

For the type of children we have been describing, we believe that something more than merely opening the windows is necessary if these children are to be restored to efficiency and made useful citizens.

In many places the penny lunch or diets of milk and crackers, sandwiches, or other less expensive methods of feeding are in vogue.

We believe that this work should have careful medical direction and supervision.

Children should not be subjected to extremes of temperature unless they are properly provided for it. There is no reason, however, why all the schools in the country should not approach much more nearly the open air schools than at present.

Even in climates where the winter temperature is a problem, windows can be opened at intervals and the rooms flushed with fresh air. The Creator has provided enough fresh air for all and almost any audience room is greatly improved by such frequent opening of windows to let the fresh air in.

One of our little boys in Chicago brought a companion to the school not long ago saying to the physician: "Say, Doctor, how sick has a feller got to be to get in this 'ere school?" The open air school advocates believe in giving all debilitated children in our schools the care and attention which will give promise of making them useful citizens, but they also believe that people should not necessarily be sick or debilitated in order to have their fresh air and hygienic rights accorded to them.

ABSTRACT OF DISCUSSION

Dr. B. Franklin Royer, Harrisburg, Pa.: We are indebted to Mr. Kingsley for placing before us in a perfectly sane and rational way some of the problems of school life, particularly the class of pupils requiring open air schools. Some of you may have been a little surprised to hear him make the statement that from 2 to 10 per cent. of schoolchildren require some form of special school care; and yet in many sections of the country the percentage runs even higher. In Pennsylvania we do medical inspection of schools perhaps on a larger scale than any other state. It is compulsory in districts of the first and second class; optional in districts of the third and fourth class. In fourth class districts the work is done by the State Department of Health. We have recently finished making an inspection of 468,000 rural schoolchildren; and in that group we found 70 per cent. defective, and 27 per cent. had defects of vision as shown by the crude test with Snellen's chart. Many of them would have shown other defects of vision had we been able to carry out more elaborate tests. What I more particularly want to relate, however, and it bears directly on the subject under discussion at present, is what we have recently observed in certain schools in the little coal town of Nanticoke, with a population of 8,000. Dr. Waters, the city medical inspector, in examining 365 pupils in the isolated eighth ward of that city, found a large number of the children having tuberculosis. He stood aside ninety-nine children in a school of 365 as probably having tuberculosis, and urged open air treatment. The physicians in the town made uncomplimentary remarks; the school board and local health board thought he was unduly radical and made diagnoses without proper information at hand, and suggested that he come to the state health department and ask us to make a confirmatory examination. We sent for this work Dr. Karl Schaffle, chief of our dispensaries, and Dr. Charles H. Miner, two of our best medical men, with large experience in examining tuberculous children. Nurses were sent along. A room was set aside where we might make physical examinations of chests of all suspicious children. To our surprise, out of a group of 120 children examined with great care, including the ninety-nine set aside by Dr. Waters, forty of them gave enough evidence of active tuberculosis to justify a diagnosis of this disease, and sixty were set aside as children who should undoubtedly have been in an open air school. That gave us a percentage of 17. Mr. Kingsley has put it at from 2 to 10 per cent. We have not attempted to work out the percentage in the better types of schools and in communities where well-to-do people live and better housing conditions obtain. However, Mr. Kingsley is certainly well within the limits for most communities.

In Nanticoke the school board was quite willing to cooperate, and immediately converted this entire school into an open window school, and are now planning to isolate in an open air school and teach separately those believed to be actively tuberculous, and to continue the great number of suspicious children in the open window rooms of the school now in operation.

The Department of Health has undertaken to correct conditions through the housing bureau, and has put enough pressure on the coal companies to make provision for building new houses outside the congested district, and we hope in this way to thin out and apportion to proper space the various families that are there, and eventually to do a great deal toward overcoming present conditions.

Dr. William C. Hassler, San Francisco: I would like to ask Mr. Kingsley and Dr. Royer whether in their sections they met with such opposition as the League for Medical Freedom, who object to the investigation of conditions in the home, and particularly among the schoolchildren?

Dr. Royer: School medical inspection was made compulsory in certain districts in Pennsylvania in 1911. No opposition appeared in these districts. The League for Medical Freedom, however, circularized every school board in districts of the third and fourth class, some 2,500 boards, where inspection was optional. A lot of them (1,500 districts of the fourth class) voted against inspection the first year. We took no note of the opposition and inspected in the districts where they refrained from voting against it. The next year half as many districts voted against inspection, even with the league's agitation continuing. The school boards have come around, fewer voting against it each year, and we are now inspecting practically everywhere. Their attack has been a complete failure. We have not opposed them at any time, and every blow they have struck has been a boost and has done us good.

Dr. N. K. Foster, Oakland, Calif.: I spend all my time as director of health in the Oakland schools. Five years ago I induced the board of education to build an open air school. It was in the yard of one of the larger schools, and it was decidedly open air. The east side was entirely open and the south and west sides had open louvers clear across, so there was never a lack of air. We filled this school by picking out all the worst defective children we could find in the large school, about twenty-three I think. At the beginning of school in August we weighed the children in both schools carefully and at Christmas time we weighed them again carefully. The children in the open air school had done the same work as those in the other school. We had not, as Mr. Kingsley speaks of their doing in Chicago, given them food or rest. The only difference was in the air. The children from the open air room had every one gained in weight and they showed a relative gain of 55 per cent. over the children from the inside. Their mental advance had been equally good, all of them being promoted although many had failed before when they were inside. Several of them even made two grades. Special teachers have often remarked to me how bright and wide-awake these children always are, in great contrast to those in the inside schools. There cannot be any question that we are stifling and destroying the vitality of many of our children by shutting them up in close, stuffy

schoolrooms. The result of this in Oakland has been that we have from fifty to 100 new rooms, and every one of those rooms can be open air; that is, they are built in units so that the air comes in from two sides; the one side is fixed with windows that can be opened entirely, and on the other side windows can be opened so that there can be a cross draught. I think that the ventilating engineers with their wonderful schemes and ventilating machines are doing more damage to the schoolchildren than almost any other people—pumping in devitalized, dead air that has lost its invigorating qualities for them to breathe, keeping it at an even temperature without any disturbing currents, making many of the children in our schools stupid. I hope the time will come, and I hope the medical profession will let this strike deep into their hearts, that if we want to take any step to make our people strong and vigorous and well, it must be through open air schools.

DR. F. E. COREY, Alhambra, Calif.: I have constantly asked our people, if the schoolchildren can be made better and restored to health by putting them in open air schools, why should we continue to keep the well children in closed schools. I have asked the school authorities in my community why they persist in building closed school houses when we know and have heard so much of the benefit of open schools, expending vast amounts of money to build architectural monuments to endanger the health of the rising generation. I believe that the mechanically ventilated school, just alluded to, is a menace to the health of future generations, and we ought to bring to bear all the influence we possibly can to defeat it. I have seen some such buildings, and they have distressed me beyond measure, and I cannot express too emphatically my disapproval and my desire that this matter may be agitated all over the country until we get some light into the minds of our school authorities. That is where the trouble seems to be.

DR. HEMAN SPALDING, Chicago: As to the question raised here about the opposition to school inspection, in Chicago we began the examinations without saying anything about it to anybody; just proceeded, and everybody wanted their children to be examined—almost everybody. Occasionally somebody would say he would not have his child examined. We said, "Very well. We don't want to examine him. Don't bother us. Just take care of your own child"; and we continued that way for some time. Then the League for Medical Freedom began to oppose somewhat, and through some means or other—I do not know what—we threw down physical examinations for a year. Then we began again, but at the present time physical examinations are made only of such children as come with a signed certificate from the parents giving consent. We get a pretty large percentage in that way—enough to keep our men busy all the time—and will continue in that way for the present. We have no law in the state of Illinois requiring physical examinations of pupils as they have in Pennsylvania. We are trying to get such a law. I do not have the figures to give. Mr. Kingsley has given his figures, but our figures are not available as yet to give you the details and results of our examinations.

DR. B. F. HOWARD, Sacramento, Calif.: It has been well pointed out that the open air school is an important factor in the prevention of tuberculosis. I wish that some one might give us a definition of an open air school. We have all kinds of schools, from the country school with the cracks between the boards, to the city school with a goodly number of windows. I think with the open air school, or any school, we need, perhaps, quite as much what we might call an open air school teacher. I have been in a great many schools that could really be called open air schools if the windows were only properly opened, and that is particularly so here in California. We have all the facilities in the way of climate for conducting open air schools for all of our children; and yet one goes into schools where the windows are closed, most of the time. I would like to have in connection with this definition of the open air school some recipe for producing an open air school teacher.

DR. L. M. POWERS, Los Angeles: May I ask, Dr. Foster, if you have come to any definite conclusion which is better, for the boards of education or the health department to have control of the school inspection? I agree thoroughly with the doctor in reference to ventilation. I have been through all of that.

DR. FOSTER: That is a question that would bring up a great deal of discussion. It does not matter whether the board of education or the health department handle it, so long as it is handled. It is merely a matter of private opinion whether the one or the other do it.

DR. THOMAS D. MAHER, San Francisco: We have in San Francisco between fifteen and twenty open air schools, or cold air schoolrooms, and we also have one class of physically defective children, children who have been for some years under the observation of the Associated Charities; and we have in prospect, I am glad to say, an open air class for pretuberculous and tuberculous children. That is what we have in prospect for the coming year, and I am sure that we will find in the public schools many children not only suffering from tuberculosis, but pretuberculous children with enlarged lymphatic glands, and cases of that character. We have in California no mandatory laws compelling any school inspection. We are going along and meeting with only sporadic opposition.

DR. OTTO P. GEIER, Cincinnati: Two queries suggest themselves to me as the result of hearing this paper. First, if the open air school does so much for the tuberculous child and for the pretuberculous child, why should we not at once take the next rational step and make all of our schools open air schools? Why should we wait until we find by physical examination that a child is pretuberculous before we begin to use this remedial agency, fresh air? I think we all go through the cycle. My attention in Cincinnati was first called to the open air school in connection with the tuberculosis hospital, and later on we got busy with our open air school to treat pretuberculous children; and I believe one of these days we will have to come to the proposition of treating everybody as pretuberculous and give them all open air treatment.

The doctors seem to fail singularly with a thing they are working with all the time, and that is the open air hospital. We have just finished building a $4,000,000 hospital, and we have done the usual thing—put some porches on it, and roof gardens; but the expense of removing patients to inadequate porches and the expense of moving up to the roof garden is prohibitive. I believe that when that hospital builder finally arises who has the courage to turn the hospital inside out and put the inside on the outside, and just a few dozen rooms on the inside so that they may be cared for, then we will make some progress in our hospitals.

MR. SHERMAN C. KINGSLEY, Chicago: I entirely agree with the point of view mentioned here two or three times, namely, that all children should have fresh air and plenty of it.

The ideal of open air school advocates is fresh air and hygienic rights for 100 per cent. of schoolchildren. I do not pretend to know the truth about ventilation. Many scientific studies are now in progress. The scientific experts, so far, do not seem to agree even among themselves. What we understand now concerning the ventilating system in vogue is that windows and doors must be kept shut. Not long ago it was almost equal to separation from the service for a teacher to violate this rule. It is a question whether we protect anything but the ventilating system. My own belief is that whether you have a ventilating system or not, or whether you keep the windows closed and keep the air moving by mechanical process, sending it through the pneumatic laundry to be washed and returned, no matter what the process, I believe that the teacher and the children themselves will be benefited by frequent opening of the windows and letting in some of the air which is always in abundance on the outside of our buildings.

Over and over again, even in so-called ideally ventilated rooms in new buildings, I have seen adult audiences revive, freshen up and regain the look of human intelligence on the opening of windows. They freshen like a wilted garden after a shower.

It seems to me that some kind of mechanical device should be helpful in getting air into the inside of large buildings where there are inner rooms, corridors and recesses. There are days when the air is stagnant and does not move without some provocation. However, I feel that ventilating systems ought to be used and made to serve, and not venerated and worshiped. Air has qualities, not motives and impulses. We sometimes act as though it would be accommodating and do the thing which is expected of it, just because we expect it.

It is my belief, as I said before, that the efficiency of every school building in the land will be greatly increased by the periodical opening of windows and letting in the air. I believe that both teachers and pupils should be taught to open windows rather than to close them and to feel that opening them was something they never ought to do. We know that we all feel better in the open air. All you need to do to convince yourself, is to look at the children when they gather in the schoolroom on September 1 and then look at them again in June. The open air and outdoor life that they get in the two months keeps them going for the other ten.

THE SANITARY ENGINEER IN PUBLIC HEALTH WORK *

SAMUEL G. DIXON, M.D., LL.D.
Commissioner of Health, Commonwealth of Pennsylvania

AND

B. FRANKLIN ROYER, M.D.
Chief Medical Inspector

HARRISBURG, PA.

For efficiency, a public health organization in a representative form of government should, in our opinion, be directed by one versed in sanitary and practical medicine as well as in sanitary engineering. A little training in entomology and geology would add to the efficiency of the executive. He should be clothed with great police powers. The foundation of the organization should be a statistical division, including vital, morbidity and marriage statistics. Cooperating and depending on this statistical division, a medical division should be established, headed by a medical chief with an experience of at least ten years in general and special hospital work and in epidemiology. The medical associates should be those fitted for bureau work and for field service throughout the territory over which the department has jurisdiction.

Independent of the responsibilities generally recognized as belonging to a medical division, it is essential for the best work to have a system of hospitals for communicable diseases. In connection with the department there should be a corps of sanitary engineers and a well-equipped laboratory with workers in pathology, bacteriology and chemistry.

Divisions for tuberculosis sanatoriums, dispensaries and for the distribution of biologic products are necessarily required.

Another important division should be one on housing, headed by a sanitary engineer or a broadly educated medical man.

To promote economy and efficiency in all the other divisions, the department must have a technical purchasing and bookkeeping division.

With the divisions already mentioned it is desirable that there should be one on foodstuffs and drugs, including, of course, milk hygiene, and all these should be accompanied by a division of education and publicity, for in a representative form of government the police medical laws cannot be readily enforced if they are far in advance of the intelligence of the people. The publications of the division should be both medical and literary, and as important as any is the utilization of the newspapers, as the latter are the only publishing channel that reaches every fireside.

Our personal experience has also impressed us with the great necessity for doing medical school inspection, and, in handling communicable diseases, of having a well disciplined staff of licensed nurses; they may not only teach the children in schools, but also teach the poor in their homes.

With this discussion of the suggested divisions of the organization we can better understand the place of the sanitary engineer in public health work.

The medical division is informed, through the statistical office or division, of the undue prevalence of infectious diseases in any community, such as are transmitted by water, milk or foodstuffs. The sanitary engineer often plays a most important part in overcoming the trouble.

While the medical inspector is analyzing samples of water and milk, and studying the movements of the individual persons who have been ill, and the character of the food supplied to them, the sanitary engineering staff traces the source of these supplies and their ultimate distribution in the infected territory. The sanitary engineer often definitely locates the source of infection, particularly when the public water supply is at fault. His services may always be employed with advantage in the enforcement of such sanitary reforms as may be required to wipe out the source of danger and in planning for the elimination of further dangers from it. It is only when the engineering department cooperates closely with the various other subdivisions of a public health organization that the executive officer may properly control and combine their efforts, direct their several separate plans of investigation, harmonize their results and do the state's work economically and effectively.

The medical officer and the sanitary engineer must work together in field epidemics, particularly of water-borne disease; let this be direct or indirect. The medical officer takes precedence and reviews with local men both the probable source of infection and obscure cases of the disease. An engineer follows and enforces disinfection procedure as well as abatement of nuisances detrimental to health, and such general sanitary clean-up as may be required. From the coordinated studies of the medical and sanitary engineering services of a department the executive officer naturally draws his inference on which he bases judgment and plans reforms, determines results and anticipates further needs.

Profiting by the strictly medical experience gained in the suppression of epidemics of water-borne disease and the results of bacteriologic research, the sanitary engineer investigates and studies the water supplies of the state generally, and the watersheds of such supplies, for the purpose of protecting and furnishing a potable water to the people and for the purpose of preventing the occurrence of epidemics in large centers of population.

A very large part of the activities of the sanitary engineer in a health organization consists in making those studies for the executive officer that enable him to pass judgment on the plans of water works and sewerage works which are to be built to serve the various

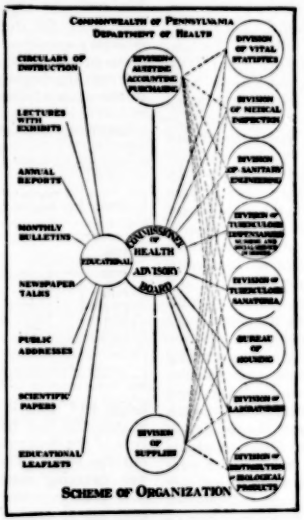
* Read before the Section on Preventive Medicine and Public Health at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

communities of the state. It is from these preliminary investigations by the engineer that the executive officer determines whether the capacity of particular water works or sewerage works is sufficient for present and future needs, and whether such works are planned so as properly to safeguard the health of the public. In studies of this type the engineer has the assistance of the department's laboratory skill and scientific interpretation, in order to enable the executive officer to advise concerning the type of construction and character of the plant most likely to bring about desired purification, or pass final judgment on plans submitted.

Another important activity of the engineer in a health organization is supervision of water and sewage works already in service in order to hold responsible local officials up to the highest degree of efficiency in care and operation of the plant. Just as a chain is no stronger than its weakest link, so is the water plant or sewage plant no safer than the staff of its operators. Proper supervision may prevent disastrous results and in this supervision the engineer constantly needs the laboratory worker associated with him at his elbow.

In Pennsylvania no system of water supplies or sewers and no sewage disposal plant may be constructed or extended unless the plans and specifications therefor are first submitted to the department of health and carefully studied in the field by the sanitary engineering division. The facts thus obtained are carefully reviewed by the chief engineer, who then goes over the entire situation with the commissioner that recommendations may be made to the governor and attorney general for approval.

The sanitary engineer also patrols the watersheds, and in the patrol of the watersheds, seeks out and abates all possible sources of pollution. In the general work of the medical staff conditions are discovered that require the work of the engineering division.



Scheme of organization of Pennsylvania State Department of Health.

Coordination is the key-note of the successfully organized public health department and the sanitary engineering division is one strong arm in such an organization. Let us take, for example, the plan of organization worked out in the Commonwealth of Pennsylvania (see chart). You will note in the scheme of organization that the sanitary engineer derives his authority directly from the commissioner of health and reports directly to him; that he is relieved of the details of purchasing his supplies and doing his own bookkeeping; that he works side by side with the medical division and the other important executive divisions of the organization, any branch of which may instantly be called on for aid and cooperative work.

The Pennsylvania Department of Health in the very beginning of its organization conceived the present plan of organization and later worked it out in detail. The commissioner of health has never at any time hesitated to use the engineering division or any other division of the department for the purpose of ferreting out troubles having any bearing on public health.

The need for a sanitary engineer and a well-equipped laboratory has been recognized for many years. Not until ten years ago did Pennsylvania appreciate this necessity and in the organization of her public health forces under the laws of 1905 legal provision was made for the employment by the commissioner of health of such engineering assistance and laboratories as might be necessary to carry on the work of the department.

A division of sanitary engineering was organized. This division has increased in size until now it contains more than 100 trained employees, all giving their entire time to the sanitary details of the health work of Pennsylvania and laboring in conjunction with the medical and other forces of the department.

With a population of over eight millions (8,380,000) and a surface area of nearly 45,000 square miles, Pennsylvania has need for this engineering organization, which I believe is larger than that maintained by any other state.

The protection of the purity of the waters of the state is the fundamental work of the engineering division. This is accomplished by preventing the entrance of sewage into the streams and by the purification of water furnished to the public from polluted supplies, or else by requiring that water be obtained from uncontaminated sources.

The importance of this work is self-evident, as an adequate supply of pure water is necessary in every municipality. The urban population of our country is increasing, and with this growth comes a proportionate increase in the amount of water used by each individual. The quantity of water which can be procured from unpolluted sources is generally insufficient for the needs of our modern cities. It follows that the large surface streams will be used more and more as sources of public water supply. These streams are usually contaminated and their use would cause an increase in the occurrence of water-borne diseases, such as typhoid fever and bacillary dysentery. While it is true that polluted water can be purified, it is equally true that purification works occasionally fail in their function, and therefore cannot be considered an adequate safeguard.

The only sure remedy is to remove the cause and to restore all streams to as cleanly a condition as is practicable by the employment of modern methods of stream protection; in other words, by preventing the discharge of raw sewage into the streams.

A law passed by the general assembly in 1905, entitled "An Act to Preserve the Purity of the Waters of the State for the Protection of the Public Health," furnishes the Pennsylvania Department of Health with the necessary authority for carrying on this great

work. The engineering division bases its operations on the provisions of this law.

This act prohibits the discharge of sewage by persons into any stream or other body of water in the state, and also requires all municipalities desiring to extend existing sewer systems to secure a permit therefore, issued on unanimous agreement of the governor, attorney general and commissioner of health. These permits stipulate such conditions as may be necessary to subserve the general interests of the public health. This law also forbids the construction of water works for the supply of water to the public, whether by companies or by municipal corporations, unless a written permit shall have first been obtained from the commissioner of health and under such stipulations that the supply may not be prejudicial to public health.

A great deal of study and investigation of an engineering nature is required for carrying out the provisions of this law. The permits issued by the state authorities cannot be arbitrary decisions. They must, to be of value and to carry out the intent of the law, be based on sound engineering judgment. Over 2,000 separate studies and engineering investigations have been made in connection with the administration of this law. From the organization of the department to the present time sewerage conditions have been studied in over 450 separate municipalities and townships in the state, and 940 permits granted as prescribed by law. Every one of these permits was issued after a personal investigation by officers of the department and contains such stipulations as were considered necessary to subserve the general interests of the public health. Two hundred and twenty-five modern comprehensive sewer systems for municipalities and ninety-seven sewage treatment plants have been built under these permits, and many others are about to be constructed. Seven hundred and eighty permits for water works construction have been issued controlling the supply of water to over 700 separate municipalities or townships. Field investigations and studies were also made in each case and the permits included such conditions as were necessary to protect the public.

One hundred and seventeen water filtration plants are in operation supplying purified water under permits from the department of health to municipalities having a total population of over four millions, or approximately 50 per cent. of the entire population of the state.

The department's activities do not cease after a water filtration or sewage treatment plant has been built and placed in operation. Weekly reports covering the details of daily operation of the works are regularly filed with the department of health and these reports are carefully studied by experts, and suggestions for improvements are frequently sent to the different municipalities. In addition, a force of trained engineers is constantly traveling about the state inspecting these plants at irregular intervals. These precautions are taken in order that the public may derive the benefits that can only be secured when the works are efficiently maintained. Their value has been proved many times as the department's representatives frequently find that, due to carelessness or ignorance on the part of the operators, the precautionary measures provided by the designer of the plant and approved by the state have been neglected or entirely forgotten.

The department's attention is directed to the discharge of sewage not only from public systems, but also from individual houses in the townships of the state. A large force of inspectors is engaged on a house to house inspection in the rural districts and especially on the watersheds of the streams used as a source of water supply. Nearly one half of the watershed area of the 28,000 miles of streams in Pennsylvania has been covered in these inspections. In case of pollution of state waters from an overflowing privy or cesspool, from a barnyard, or from kitchen or bath wastes, the inspection seeks to bring about an abatement of the pollution, invoking the aid of the courts, if necessary. The department's aim in this matter is not merely to secure a temporary abatement, but also to require the installation of such apparatus or the adoption of such measures as will cause a permanent abatement of the menace.

During the year 1914 alone, 104,587 properties on 371 different watersheds throughout the state were inspected. Of this number, 25,300 were in an unsatisfactory condition; 13,107 pollutions were abated on these properties during the year.

From the beginning of the work of the department to the close of the year 1914 a total of 739,437 properties had been inspected or reinspected and 117,168 abatements had been secured through efforts of officers of the department on properties scattered throughout the state. The effect of this work on communities drinking water from streams which previously had been contaminated by these pollutions must be counted as one of the factors that has reduced the general death rate and especially the typhoid fever death rate.

DEATHS FROM TYPHOID FEVER AND LIVES SAVED
1906 to 1914 inclusive

Year	Typhoid Deaths	Rate per 100,000	Calculated Deaths 1906 Rate Obtaining	Saving as Compared with 1906
1906	3,917	54.8	.....	.....
1907	3,538	48.6	3,989	451
1908	2,450	32.4	4,064	1,614
1909	1,712	22.7	4,140	2,428
1910	1,892	24.6	4,216	2,324
1911	1,716	21.9	4,291	2,575
1912	1,310	16.5	4,367	3,057
1913	1,470	18.1	4,443	2,973
1914	1,075	13.0	4,518	3,443
			Total saved	18,865

The engineering division also aids some of the state institutions of the commonwealth. Most of these have extensive water works and sewerage systems and a number of them have been designed and constructed under the supervision of the engineering division, by means of separate appropriations secured from the legislature for the work. These systems not only protect the health of the patients in the institutions and safeguard the streams below, but they have many times served as models for similar plants for villages and boroughs throughout the state.

A great reduction in the death rate from many diseases has been noticeable in Pennsylvania. The reduction in the typhoid fever death rate, one of the best guides in water purification, has been especially marked, and in the ten-year period since the state department of health was organized has resulted in the saving of thousands of lives to the state.

In 1905, when the department began its operations, Pennsylvania was a typhoid-ridden state. The purification of the water supplies and the improvement in general sanitary conditions have been factors of tremendous influence in bringing about this marvelous reduction in the number of deaths from disease so often water-borne in origin. This combining of work essentially engineering in nature with medical work brings results and proves the value and propriety of utilizing the sanitary engineer in a public health organization.

ABSTRACT OF DISCUSSION

DR. VICTOR C. VAUGHAN, Ann Arbor, Mich.: The work that Dr. Royer has presented as done by the Commissioner of Health of Pennsylvania is a very good thing. Pennsylvania certainly needed to do this kind of work. Western Pennsylvania, as the doctor says, was a hot-bed for typhoid fever; and it was not confined to Pennsylvania but to the whole country. It was not safe for anybody to come into the region around Pittsburgh because of the possibility of getting typhoid fever. I think that many states have found it necessary to make the sanitary engineering department of the state health work very important. I know we have in Michigan. For some years we have had a very competent state sanitary engineer as an official of the State Board of Health and an engineering department; and we have the same rules, the laws that Dr. Royer has got for Pennsylvania. They say that the medical profession is the only profession that buries its mistakes — puts them out of sight. That is quite as true of the engineering profession as it is of the medical profession; and faulty engineering in this country has added greatly to the death list. It has not only added greatly to the death list, but it has increased enormously the expenditure of money. I had a letter only a few weeks ago from the editor of one of the engineering journals wanting me to write an article for that journal showing the advantage it would be to the engineering profession to have engineers examined like physicians are examined. Now understand me — wanted me to write an article showing the great value that it would be to the engineer to have state boards of examiners for engineers, just as the physicians have. I wrote him that state boards of medical examiners were not for the benefit of the medical profession; they were for the benefit of the public; and the same reason would apply to the examination of sanitary engineers. If anybody questions it, simply come to Michigan and travel around with me for a few days. I can show where bungling engineers have buried millions of dollars so that they cannot be resurrected, and at the same time have endangered the lives of, and probably killed, many people. The sanitary engineer is an important and essential adjunct to any health department. The public has the services of the United States, represented here by Dr. Rucker, as recognition of that fact. You cannot do public health work without the sanitary engineer.

DR. B. FRANKLIN ROYER, Harrisburg, Pa.: I am glad that Dr. Vaughan reinforced in a positive way why it is absolutely necessary that engineers' plans for water works and sewage works be submitted to a central health organization for review and approval. It is not only in the interest of the health of the community, but it saves municipalities untold sums of money. Plans may often be submitted by an engineer who is a very good civil engineer but a very bad sanitary engineer, and unless the entire plans are materially changed, would be entirely unfit for the community's public health needs.

Popular Instruction Concerning Diet.—There is one kind of instruction much needed by the American people, which would illustrate better than any other the desirable preventive functions of health officers and boards of health. namely, instruction concerning diet.—Prof. Charles W. Eliot, *Public Health*, September, 1915.

INTERMEDIATE TRACHELORRHAPHY

ITS USE AS A PROPHYLACTIC AGAINST THE PERNICIOUS EFFECTS SOMETIMES CAUSED BY LACERATION OF THE CERVIX

H. J. BOLDT, M.D.
NEW YORK

It is not likely that any one doubts that extensive lacerations of the cervix during childbirth may do much harm, or, as lately has been shown again, by the studies of Schottlaender and Kermauner, that occasionally they may favor the causation of cancer. These authors found, in instances of cervical cancer, the presence of a laceration in the immediate vicinity in nearly every instance. Does it not then behoove us, if only as a prophylactic measure, to repair cervical tears, and to do this before pathologic changes, incident to the trauma, manifest themselves?

I purpose to plead for such procedure, and especially that it may be done when the sacrifice of material tissue is not a necessity. My justification lies in the fact that those who have made a careful study of the results of cervical tears almost invariably verify the assertion made by Dr. Thomas Addis Emmet concerning their deleterious effects. In support of this I call your attention first to the careful study of Brooks Wells, "The Etiological Relation of Cervical Lacerations to Uterine Disease," made from the clinical material of the late Paul F. Mundé and published in the *American Journal of Obstetrics* for 1888; and then to the paper read by Clement Cleveland before the New York Obstetrical Society, entitled "The Necessity for Early Operation upon the Lacerated Cervix," and published in the same journal for 1887. What those papers stated at that time holds good today. The analyses made by the authors cited I could multiply several times from my own practice, having, before and since then, seen thousands of lacerated cervices from which I could verify the position taken by these writers.

It is true that the resulting ills have been exaggerated by some physicians, but this applies to most matters, everything depending on the point of view. Some, indeed, have gone so far as to say that every laceration, whenever found, requires repair. I see many patients with slight tears who have been told that they must have the lacerations repaired, although they have existed a long time — too long to do an operation without denuding the torn edges by cutting away tissue — and are causing absolutely no trouble.

It is not my purpose, however, to dwell on the pernicious effects that lacerations may cause. It is conceded by those who have observed such patients, that sometimes the tears may give rise to disturbances, which are usually in relation to the extent of the injury. My purpose, rather, is again to call attention to a slight operation, to be applied in properly selected instances, whereby eventual ailments due to such injuries may be prevented.

The thesis I presented for admission to the American Gynecological Society, in 1887, was on "Intermediate Trachelorrhaphy." Under the rules of the society at that time, no papers coming before it were permitted to be published elsewhere than in the records of its activities. My thesis, therefore, appeared only in the society's transactions for 1888. Now, after so many years of added experience with intermediate trachelorrhaphy, I deem it but proper to place it before the profession at large for what it is worth.

My analysis at that time was based on 3,000 women who had borne children, in which number there were 109 who had lesions that were directly traceable to the tear. While I have not since attempted another analysis, yet from the recollection of my observations I am constrained to hold a similar view today.

From the foregoing it will be seen that I do not claim that all lacerations are productive of pathologic changes; neither do I claim that there is any time limit as to symptoms showing themselves after the injury. According to Cleveland the average time in his cases was four years and six months; but this may be shorter or longer.

Montrose A. Pallen, whose assistant I was during the early part of my professional life, held that all tears should be closed immediately after delivery; but it will be conceded that this is not practical or necessary, except in case of hemorrhage from an exceptionally extensive tear. It is far better to wait until the effect of contusion has passed off and bleeding has ceased, so that one may inspect with exactitude. Moreover, many small tears heal spontaneously post partum. After, say from four to six weeks post partum, however, the genital tract should be inspected, particularly in primiparas, because for these the operation is particularly intended, and if a tear of some extent is found, it should be repaired.

TECHNIC

My present method of repair is simpler than formerly — so simple, in fact, that any one with a little surgical ability can easily adopt it.

The patient is placed in the lithotomy position and the customary disinfection attended to. If she is not hypersensitive and not nervous, no anesthetic is required, for the operation is not very painful.

The cervix is pulled down with a pair of well-working bullet forceps, and exposed with vaginal retractors. The bullet forceps are then adjusted, one pair in the line of the cervical canal on the anterior lip, and one pair similarly applied on the posterior lip. With a narrow but very sharp scalpel — sharp especially at the point — a superficial film of tissue is scraped off the torn surface, taking particular care that the angles of the tear are made raw. For sewing I usually use a full-curved, medium-sized Martin needle, which has cutting edges; but one may use any other needle, if more accustomed to it. A No. 2 chromic catgut is passed so as to include the entire depth of the tear. Usually two sutures suffice for each side of the tear. Sometimes only one suture is required for one side, it frequently being the case, in instances of bilateral tear, that the extent of the tear on the sides are unequal in extent. This also holds good for stellate tears. Care should be exercised in tying. The surfaces should be brought together just snugly, never too tight, so that the sutures may not cut into the tissue. No after-treatment is necessary, and the patient may be about as usual after the operation.

It will be seen from the foregoing that the operation is not applicable to any case in which the tear has existed long enough to cause pathologic changes, in which scar tissue is present in the angles. In all such patients the scraping, or making the torn surfaces raw, does not suffice. That is why I say that it is particularly applicable for primiparas who have not previously sustained a tear, and that in the case of every primipara it should be part of the accoucheur's duty to make a visual inspection in about four to six weeks subsequent to delivery, and then to repair any existing laceration (unless it be of negligible extent) in the way outlined.

It is understood that in scraping the edges scrupulous care should be taken to avoid the mucosa of the cervical canal.

39 East Sixty-First Street.

A METHOD OF TESTING MUSCULAR STRENGTH IN INFANTILE PARALYSIS *

E. G. MARTIN, PH.D.
AND
ROBERT W. LOVETT, M.D.
BOSTON

The determination of the strength of partly paralyzed muscles in infantile paralysis, if made at all, has been done in the past by the roughest sort of guess, most often by pressing the hand against the contracting muscle. It was suggested to the physiological department of Harvard University in the winter of 1914-1915 that a more accurate means of estimating muscular strength would be of great value, and the method here described was formulated, with the following aims:

1. To enable a more accurate diagnosis to be made in the way of picking out the seriously affected muscles after an attack.

2. To obtain a means of indicating the muscles which were most promising for mechanical or operative treatment.

3. A quantitative measurement of this sort which would give a means of gaging the effectiveness of different modes of treatment.

4. A method of this kind might enable one to pick out from supposedly abortive cases certain cases in which remained a residual muscular paralysis too slight to be perceived by other methods.

To be of service the technic should be relatively simple and the results reliable. The method, which has been developed and used in a large series of tests extending over six months, seems to satisfy both these criteria to a reasonable degree.

The index of muscular power employed is the resistance of the muscle group to a steady pull sufficient to overcome it. A sling is adjusted in an assigned position over the part of the limb in which the muscle group to be tested has its insertion. The sling is fastened to an accurate spring balance through which the pull is exerted. The balance must be held carefully in a line at right angle to the axis of the part of the limb to which the sling is adjusted, and is read either at the instant the muscle yields, as in the test of plantar flexion, or when the member is drawn into an assigned relationship with the body, as in knee extension.

A standard technic has been worked out for each of the following movements: In the legs, plantar and dorsal flexion, inversion and eversion of foot; adduc-

* From the Department of Physiology of the Harvard Medical School and the Orthopedic Department of the Children's Hospital, Boston. The preliminary report to the State Board of Health of Vermont of an investigation conducted under their auspices.

* The funds for the pursuit of this inquiry were furnished by an interested citizen of Vermont.

tion and abduction, flexion and extension of the hip; flexion and extension of the knee. In the arms, pectoral, latissimus dorsi, anterior and posterior deltoids; forearm flexion and extension; thumb adduction and abduction. These include the important groups except the trunk muscles and the rotators, which are mechanically difficult to test reliably. The tests in detail will be described in a subsequent communication.

To be able to judge fairly the degree of impairment of an affected muscle group one must know what should be expected of the same group when normal. To this end we have prepared, on the basis of tests of a large series of normal children, tables of standard muscle strengths for all the groups listed above, for ages from 4 to 16 years. These tables give information not only of the normal strength of each group of muscles, but also of the relative strengths of the different groups.

To judge, on the basis of repeated tests, whether an affected muscle has improved or deteriorated, allowance must be made for possible variations in the vigor of voluntary innervation. To obtain data for this allowance we test regularly all the leg groups of both sides in cases that have any leg muscles affected, and all the arm groups when there is impairment of the arm.

Such changes of power as are shown by the *unaffected* muscles after a short interval are not referable to changes in muscular condition, but must signify changes in innervation. We can conclude, from the records of the unaffected muscles, what allowance to make for changes in innervation, and so determine how much of the change shown by the affected muscle is actual increase or loss of muscular power.

In favor of the method it may be said that successive tests at short intervals on the same subjects show the readings as to individual muscle groups to be, in a large percentage of cases, remarkably constant.

234 Marlborough Street.—Harvard Medical School.

SUDDEN BLINDNESS DUE TO SUPPURATION OF THE ACCESSORY NASAL SINUSES

WITH REPORT OF THREE CASES *

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That the intimate anatomic relations existing between the nasal accessory sinuses and the orbital contents has caused much eye complication has long been well known, but it is only within the last few years that special attention has been given this subject, as is shown by the literature on the subject.

In the last three years I have had in my practice three cases of sudden monocular blindness, which were diagnosed as due to nasal suppuration, and cured by endonasal treatment. These cases were of such a nature that diagnosis was not easy, one case being diagnosed by the presence of central color scotoma for red and green; one by dilated pupil, and one by dilated pupil, color scotoma and involvement of the ocular muscle. These cases led me to investigate the ophthalmic literature, to see if by tabulating the symptoms of all cases reported there would not be found some more definite way of diagnosing the eye condition and locating the nasal trouble. I have collected from the literature 88 cases of sudden blindness from nasal disease, most of them with normal fundus (those that were not normal having only optic neuritis, with the exception of two which had a neuroretinitis), leaving out the cases that were complicated by a history of syphilis, tuberculosis, detached retina, uveitis, and including only two having orbital abscess. This confines the cases to that form which we recognize as retrobulbar neuritis. In 69 of these cases one eye, in 19 both eyes were affected. Of the 88 cases, 16 are from the English literature, 14 from the French, and 58 from the German, and date from 1839 to the present time. The French seem to have reported more in the early literature, but of late years the German reports have predominated. Of the total, 63 cases have been reported in the last ten years. In order that my own cases may be commented on under the separate heading of "Symptoms," I herewith give their history:

CASE 1.—H. O. J., aged 35, came under my care Feb. 11, 1911, with the following history: In November, 1910, while he was standing on a steel cable attached to an engine, the engine started, throwing him in the air and causing him to alight on a steel rail on the right side of his head, cutting his ear in the median line and causing a fracture of the base of the skull with the usual accompanying symptoms of hemorrhage from the ear, etc. He was trephined within forty-eight hours and a blood clot removed; he remained unconscious for several days. After regaining consciousness, it was noticed that he had a paralysis of the right externus muscle, causing diplopia, due, undoubtedly, to involvement of the sixth nerve of that side. When referred to me, one month after the injury, examination showed that he had a normal vision in each eye, but up to that time had developed no movement of the right externus muscle. He was placed on increasing doses of strychnin, and his right eye covered with ground glass, to relieve him of the troublesome diplopia. He was under treatment for three months, with slight improvement, when he was referred to me again, May 2, with a history of the vision in the left eye suddenly becoming obscure April 28. He was able to read in the morning, but in the afternoon could only see objects indistinctly, the vision gradually growing worse up to the time I examined him, when the vision in his left eye was 21/100, vision in the right eye being normal. Examination of the left eye showed the pupil regularly reacting to light and accommodation; no fundus change was found, except a possible engorgement of the retinal vessels; peripheral field of vision, normal for white, but an absolute color scotoma for red and green; no sign of exophthalmos or orbital involvement; urine negative; no syphilitic history. At this time he gave no history of nasal trouble, and nothing was found on examination. Thinking there might be some syphilitic trouble, he was sent home and placed on increasing doses of potassium iodid. He returned to me on the twenty-second, vision having decreased to counting fingers at a few feet. The pupils were still normal in reaction; central color scotoma was still present, and no sign appeared of orbital involvement. Examination of the nose at this time showed pus coming from under the middle turbinate on the left side. Probing disclosed no uncovered bone; no involvement of the frontal or maxillary sinus could be found. The sphenoid was not probed, but there was no pus coming from this region. Diagnosis was made of retrobulbar neuritis, due to empyema of the ethmoid cells. In order to drain them, the usual preliminary operation of removing the anterior end of the middle turbinate was done, and he was placed on 5 grains of hexamethylenamin three times a day. There was an increased discharge of pus, and in five days his vision went up to 20/20; the color scotoma was still present; there was no marked decrease

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in the amount of discharge for several days. He was kept under observation until August 17, the discharge at this time having decreased and the vision improved until he could read a number of letters in the 20/15 line. Since that time no further work has been done on his nose. The vision has remained practically normal, although the central scotoma for red and green did not disappear for a year, and there is still a slight blurring of central vision, the pupil being slightly larger than that of the other eye.

CASE 2.—Miss M. S., a trained nurse, aged 23, came to me March 9, 1914, giving the following history:

Six days previously, while at work, vision in the left eye became dim, the pupil dilating markedly in a few hours. There was no pain, but some headache over the left frontal region. She had been using no medicine to which the dilatation could be ascribed; she had not been sick, though there was a history of an acute cold one month before. She had been healthy except for illness in childhood, and had had nasal catarrh for years. There was then some discharge from the nose, but I did not think it was pus. Examination of the eye showed no reaction of the pupil to light, accommodation or consensually; there was no change in the fundus, with the possible exception of engorgement of the veins; no signs of exophthalmos or orbital involvement. The patient complained of some pain on pressure over the left ethmoid. A few days before, a severe pain on the left side of forehead lasted several hours. Examination of the nose showed the septum deflected to the right, left nostril wide, with the middle turbinate bone showing a polypoid enlargement on the anterior end with some crusts underneath, but no signs of pus; vision 21/100, unable to read test type at 14 inches. This patient's eyes had been examined a year before and glasses prescribed for slight hypermetropic astigmatism. At that time she had normal vision in each eye. A roentgenogram was made of the skull, but nothing was found pointing to sinus involvement. She reported again the following day, vision having decreased in the last twenty-four hours to such an extent that I was unable to take the field of vision for either white or color. Probing under the anterior end of the middle turbinate, I found uncovered bone; no sign of trouble in the frontal or maxillary sinus, and apparently no trouble in the sphenoid. The preliminary operation of removing the anterior end of the middle turbinate bone was done under cocain anesthesia. The nose was treated in the usual way following the operation, and the patient was placed on hexamethylenamin. During the course of her recovery from the operation, she had a temperature of 103, which the next day fell to 100. There was very little discharge of pus up to the eighth day after the operation, with no improvement in vision or change in the pupil, when there came a decided flow of pus. Her temperature immediately became normal, the pupil decreased in size, vision increasing to 20/40; the nose continued discharging, but the quantity of pus diminished. On the fifteenth day after operation, vision was 20/60, and improved later, going up almost to normal. March 31, she again had pain over her eye, the pupil became dilated, and vision went down to 20/40. At this time I advised removal of the entire middle turbinate, with exenteration of the ethmoid cells, but the operation was refused. I did not see this patient again for six weeks, when she came back to me, telling me that the eye had gone bad twice since her last visit, the pupil again being dilated, with only ability to count fingers at three feet. I again advised operation, which was consented to. The operation was done June 22, under general anesthesia; the middle turbinate was removed, the ethmoid cells opened and curetted; some pus and granulations were found. For two days following the operation she had some headache, but no elevation of temperature; on the fourth day the pupil was markedly decreased in size, and she was able to see large objects and count fingers distinctly. July 31, she said quite a quantity of pus had been coming from the nose, but was decreasing daily. The pupil had regained practically normal size, but the action was somewhat sluggish. She had been able to read with this eye from the sixth day after the operation; the condition had been steadily improving. On the twenty-sixth day, vision was 20/15. This has remained permanent up to the present.

CASE 3.—C. M. H., a physician, aged 40, came to me Aug. 8, 1914, with a history of having suddenly become blind while driving his automobile, forcing him to stop for several minutes, until he could partially adjust himself. He had previously had good eyesight in both eyes; had noticed slight double vision. Vision in the right eye was 20/30, left eye, 20/15, the right pupil being slightly larger than the left and reacting to light and accommodation; but on reacting to light, dilating while light was still thrown on it. There was no exophthalmos, but diplopia was demonstrated with colored glasses in the central line only. Examination of the fundus showed no change, with the exception of a possible engorgement of the retinal veins; peripheral field of vision for white, normal; absolute central color scotoma for red and green. The patient had had sinus trouble years before. Examination of the nose showed no pus; perhaps pus was coming from the nose, but it was doubtful. Roentgenograms showed nothing from which a diagnosis of sinus involvement could be made: Wassermann and urine, negative. August 10, the pupil was widely dilated, no reaction to light, accommodation or consensuation, the patient being unable to count fingers at 10 feet, and central color scotoma for red and green still present. Reexamination of the nose showed that there was no pus present. No uncovered bone could be found with the probe, but the middle turbinate was pressed tightly against the lateral wall; no involvement of the frontal maxillary or sphenoid could be found. Feeling that there might be some involvement of the ethmoid, I advised an operation for the removal of the anterior end of the middle turbinate, to give drainage and a chance to examine the sinuses, but the operation was refused. Hexamethylenamin treatment was continued for three days, when enteritis, caused either by the medicine or diet, ensued, during which there were severe cramps. During this attack about half a teaspoonful of foul-smelling pus came from the right side of the nose, with immediate improvement of vision, the pupil returning to normal in a few hours. Feeling that his trouble was relieved, he refused operation, and at present he has normal vision, normal pupil and no color scotoma.

In the review of the eighty-eight cases collected, I have attempted to show the frequency of the diagnostic signs in the eye, possibly connecting these with the sinus causing the trouble, hoping in this way to locate more definitely the source of the nasal involvement. This was difficult, however, as in only a few cases in which there was more than one sinus involved, could the seat of the trouble be positively located in one cavity to the exclusion of the others. I will give the symptoms in the order of their frequency, as shown by the tabulation.

NERVE INVOLVEMENT

Some difficulty was found in tabulating the nerve findings, as a number of the early cases were rather obscure, and the diagnosis made from the description of the condition present rather than the definite term of diagnosis used by the author. The fundus in all of these cases, with the exception of one or two which had a retinitis, together with nerve involvement, was normal, the optic neuritis being the only ophthalmoscopic symptom present.

The nerve was involved in 52 cases, 9 of them being optic atrophy, 43 optic neuritis, 5 of the neuritis cases showing a choked disk. In the 9 cases of optic atrophy, the seat of the trouble was:

Maxillary sinus	1
Ethmoid	3
Ethmoid and sphenoid	2
Not located	3

In the cases of optic neuritis the seat of the trouble was:

Maxillary sinus	3
Maxillary and ethmoid	1
Maxillary, ethmoid and sphenoid	2
Ethmoid	18
Ethmoid and sphenoid	8
Sphenoid	8

Of the 52 cases, the ethmoid was involved in 33, showing the preponderance strongly in favor of the ethmoid cells in this trouble.

Of the choked disk cases, 1 was from maxillary sinus, ethmoid and sphenoid trouble, this being Halstead's[1] patient, in whom the left eye was blind from a right-sided suppuration; 1 other was Dubois'[2] patient, the posterior ethmoid being the seat of the trouble; location in the other 3 not being given.

It would be natural to think that the posterior cell would cause more pressure on the nerve by the closer proximity to it and the more confined area of the orbit in this location. Halstead's order of operation and results were as follows: Removal of the anterior end of the middle turbinate, entrance of the posterior ethmoid cells and sphenoid cavity. The condition began to improve, and in a week from that time the patient could count fingers held directly in front of her. Two weeks from the first operation, removal of the remaining part of the middle turbinate, probing and syringing the sphenoid was done, followed by slow improvement in sight. Three weeks later, the antrum, which was filled with pus, was opened and cleaned. Improvement continued after this until, five and a half months after operation, vision was 6/18. He ascribed the blindness and swelling of the optic disk to pressure from the sphenoid.

Fish[3] says that among 36 cases of optic neuritis found in the literature, 26 cases were of diseases of the nasal accessory sinuses. He, therefore, maintained that this etiologic factor should be credited with greater importance than is usually accredited it.

The direct nasal relationship was shown in 15 cases by improvement in the ocular condition following drainage; the 11 remaining cases were attributed to the same cause, although the connection could not be demonstrated by ocular improvement, as most of the cases presented more or less optic atrophy, while in others the treatment as advised was not undergone. In this paper he reports a case of optic neuritis from growth, as have others. Elschnig,[4] in discussing the significance of accessory nasal disease in the pathology of the eye, says that these cases represent about 15 per cent. of all optic nerve affections.

In the 43 cases of optic neuritis here tabulated, 38 patients improved with nasal treatment, showing this certainly to have been the causative factor in the large majority. From the analyses of these cases, we can safely say that blindness due to nasal sinus empyema, in addition to the retrobulbar neuritis, does, in about 50 per cent. of the cases, advance to such a stage as to cause an optic neuritis, and in a small percentage of cases goes on even to a choked disk; that all of these conditions are due possibly to the same cause, one being but an advanced stage of the other, and dependent to a certain degree on the location of the nasal involvement. None of my patients had an optic neuritis, but I ascribed this to the fact that they either had partial drainage from the affected sinus, or that they were seen early enough to prevent its formation.

1. Halstead: Empyema of the Right Maxillary, Ethmoidal and Sphenoidal Sinuses, with Sudden Blindness of the Left Eye; Operation; Recovery of Sight, Tr. Am. Laryngol., Rhinol. and Otol. Soc., New York, May, 1901, p. 61.
2. Dubois: Rhinogene eenzijdige Papillitis, Nederlandsch. Tijdschr. v. Geneesk., 1912, i, 336.
3. Fish: A Study of Optic Neuritis in Connection with Nasal Accessory Sinus Disease, Brit. Med. Jour., Nov. 2, 1907, p. 1218.
4. Elschnig: Die Bedeutung der Nasennebenhöhlen-Affektionen in the Pathologie des Auges, Internat. Centralbl. f. Ohrenh., 1914, xii, 487.

PUPILLARY CONDITIONS

The condition of the pupil was one of the earliest signs of the eye involvement from the nasal accessory sinuses, Beer,[5] in 1817, giving the following classification: "Vicarious Amaurosis of Suppurating Coryza Without a Demonstrable Accumulation of Mucus in the Frontal Sinus." He says the pupil in this form of amaurosis is greatly dilated without losing its clearness, the iris is immovable and its pupillary margin is not regularly rounded, but angular. Under the heading of "Vicarious Amaurosis of Suppressed Coryza with Accumulation of Mucus and Pus in the Frontal Sinuses," he says:

> After the sudden suppression of severe coryza, the patient begins to suffer from pain limited to the root of the nose and the frontal sinus region, accompanied at the same time by a very considerable amaurotic amblyopia, affecting either one eye or both eyes together, and associated with various light phenomena, and a narrowed, perfectly round, but very pale black pupil, entire immobility of the iris and diplopia.

Others of the early writers reported dilated pupil, but this point seems to have been neglected in our later text-books. Recently Elschnig[4] has called attention to it as one of the symptoms in this type of amblyopia. In the cases investigated, the pupil of the affected eye was dilated in 18, or about 20 per cent., contracted in 4. In the patients with dilated pupils the sinuses affected were the following:

Maxillary sinus and ethmoid	1
Maxillary, ethmoid and sphenoid	1
Ethmoid	9
Ethmoid and sphenoid	2
Sphenoid	1
Not located	4

In patients with contracted pupils:

Ethmoid and sphenoid	1
Ethmoid	3

The cause of this symptom has seldom been commented on by the authors.

Trousseau[6] says, in discussing reflex ocular disturbance of nasal origin: "I have seen the disappearance of an apparently inexplicable unilateral mydriasis following upon the cauterizing of ulcers in the nose." He points out that there exists a true asthenopia of nasal origin, which yields only to the treatment of the nasal pituitary. While we are unable to say exactly, this cure may have been caused by a shrinking of the membranes, allowing pus to be discharged from one of the sinuses. This is the only paper assigning a cause for the dilatation. In my two cases, I thought it was a symptom of diagnostic value, pointing to the location of the pus in the anterior cells with pressure on either a ciliary ganglion or short ciliary nerve, but Halstead's case,[1] in which

5. Beer: Vicarious Amaurosis of Suppressed Coryza without a Demonstrable Accumulation of Mucus in the Frontal Sinuses, Lehre von den Augenkrankheiten, Vienna, 1817, ii, 530.
6. Trousseau: Troubles oculaires réflexes d'origine nasale, Bull. Méd, Paris, 1889, iii, 506.

the dilatation came no doubt from the opposite sphenoid, and Gutmann's[7] case, in which he ascribed the trouble to the opposite antrum, make it look doubtful, although the latter patient had acute catarrh on the side of the affected eye, and there may have been an involvement of the nose on this side as well. But that the cause is not due to blindness alone is certainly true, or all cases would have a dilated pupil. That it is not due solely to the pus is true, for Richet[8] reports a case of dilatation caused by mucocele, while Varese[9] reports a case due to sarcoma of the superior maxillary sinus. However, this patient had involvement of the sinuses and improved after the ethmoids were drained.

Roemer,[10] in discussing absolute immobility of the pupil, says the lesion may be situated in the sphincter, in the short ciliary nerve, in the ciliary ganglion, in the motor root of the ganglion, in the trunk of the oculomotor nerve, or in the ganglion cells of the sphincter. If the lesion is situated posterior to the ciliary ganglion, physostigmin (eserin) will continue to act. If in front of it, the effect of the drug will be lessened.

Four cases of contracted pupil are reported. Hoffmann[11] reports a case in which there was supra-orbital pain, and ascribes the condition to involvement of the surpraorbital nerve and involvement of the oculomotor fibers supplying the sphincter pupillae, this case having exophthalmos. Von Eicken[12] reports a case, but ascribes no cause; this patient had diplopia and slight exophthalmos; it was due to suppuration of the ethmoid cells. Knapp[13] reported an interesting case with contracted pupil, irresponsive to light with no light perception in the eye, and a distinct optic neuritis, which improved after removing the anterior end of the middle turbinate. One week later the pupil reacted to light, but instantly dilated again; the pupil was normal on the twenty-third day after operation.

EXOPHTHALMOS

Exophthalmos was mentioned as a symptom 17 times, with the following sinuses involved:

Maxillary sinus	4
Frontal and ethmoid	1
Ethmoid	7
Ethmoid and sphenoid	1
Sphenoid	1
Not located	3

This should point to this symptom as coming more frequently from the antrum and ethmoid, possibly because of their having a larger surface given to making up the bony wall of the orbit. Elschnig[4] says in unilateral infections, one half of the cases present a slight exophthalmos, measurable by means of Hertl's ophthalmometer. This close observation by Elschnig makes it seem as though exophthalmos had been present in many cases and not diagnosed by observation. In Gutmann's[7] case, all the conditions were ascribed to the antrum on the opposite side, but, as noted under "Pupillary Conditions," there was an acute catarrh on the affected side, which might have been a sinus involvement. Sommer, in discussing Meyer's[14] case, reported a case in which there was exophthalmos, which was ascribed to frontal and ethmoid involvement, and which at postmortem examination showed advanced caries of the sphenoid bone with normal sphenoid cavity.

The external muscles were involved in 11 cases, as follows:

Maxillary sinus	3
Maxillary and sphenoid	1
Ethmoid	4
Ethmoid and sphenoid	2
Sphenoid	1

showing, as in exophthalmos, the predominating influence of the antrum and ethmoid.

RESTRICTION OF VISUAL FIELD

Berger[15] says, in 1887: "I was the first to observe a narrowing of the visual field following upon disease of the nasal fossa. A short time after my communication, analogous observations were published by Zeim, Killam, Hamilton and others." Eighty-two of the total number of cases were published after Berger reported restriction of the peripheral field as one of the symptoms, but only three cases of restriction could be found. Birch-Hirschfeld[16] claims that the restriction is of later date than the central scotoma, and emphasized the fact that central scotoma, first relative, then absolute, is the first symptom. Van der Hoeve[17] and others emphasize the point that the first symptom is the enlargement of the blind spot for color, believing this to occur exclusively in involvement of the posterior accessory sinuses.

The three restricted fields were: Maxillary sinus 1, ethmoid 1, and frontal 1; all of them being cases of long standing, which strengthened Birch-Hirschfeld's assertion that restriction comes later.

SCOTOMA

There were fourteen cases in which scotoma was mentioned, but all of them were not confined to the central field. They are divided as follows:

Maxillary sinus	1
Maxillary, ethmoid and sphenoid	1
Frontal and sphenoid	1
Ethmoid	10
Sphenoid	1

Snellen[18] reports a case of the right eye being blind, left eye with visual acuity of 6/60; temporal hemianopsia cured by opening the sphenoid. Onodi[19] reports a case of suppuration of the posterior ethmoid cells and of the sphenoid sinus, associated with optic atrophy of long standing on the right side, with optic neuritis and temporal hemianopsia on the left side;

7. Gutmann: Erkrankungen des Auges in ihren Beziehungen zu den Nasen-Nebenhöhlen Empyemen, Ztschr. f. Augenh., 1906, xv, 403.
8. Richet: Thèse de Sautereau, p. 68. Quoted by Kuhnt: Ueber die entzündlichen Krankheiten der Iternhöle, 1895, p. 106. Hopjik: Entzündliche Erkrankungen der Nebenhölen der Nase, 1915.
9. Varesc: Malattie dei seni della Faccia, Arch. di ottal., 1895, iii, 96.
10. Roemer: Text-Book of Ophthalmology, New York, Rebman Company, 1913, p. 580.
11. Hoffmann: Entzündliche Affektionen in der Orbita und am Auge, Ztschr. f. Augenh., 1906, xvi, 1.
12. Von Eicken: Komplikationen bei Erkrankungen der Nasen-Nebenhöhlen, Tr. German Laryngol. Soc., 1908, p. 17.
13. Knapp: Bilateral Optic Neuritis after Ethmoiditis, Tr. Am. Ophth. Soc., 1908, xi, Part 3, p. 681.
14. Meyer: Ueber die ophthalmologische Diagnostik der Erkrankungen der Nasennebenhöhlen, besonderes der hinteren, München. med. Wchnschr., 1912, No. 52, p. 2888.
15. Berger: Rapports des maladies des veines avec celles du nez et de ses cavités voisines, Bull. Soc. de méd. prat. de Paris, Jan. 15, 1892, p. 35.
16. Birch-Hirschfeld: Beitrag zur Kenntniss der Sehnerven Erkrankungen bei Erkrankung der hinteren Nebenhöhlen der Nase, Arch f. Ophth., 1906, lxv, 440.
17. Van der Hoeve: Sehnerven-Erkrankung bei Erkrankung der hinteren Nebenhöhlen der Nase, Arch. f. Augenh., 1909, lxiv, 18; ibid., 1910, lxvii, 101.
18. Snellen: Beziehungen zwischen Erkrankungen des Sehnerven und der hinteren Nasen-Nebenhöhlen, Internat. Centralbl. f. Laryngol. u. Rhinol., 1909, xxv, 491. (Utrecht Medical Meeting, April, 1909.)
19. Onodi: The Optic Nerve and the Accessory Sinuses of the Nose, Lockhoff's Auth. Trans., New York, William Wood & Co., 1910, p. 93.

the left eye improved slightly after operation. He points out that the posterior ethmoid cells are not infrequently closely related to the optic canal, the bony wall being very thin in all these cases. Gutmann[20] reports one case of right-sided central scotoma, with temporal narrowing of the field, which result he ascribes to the action of toxins arising from empyema of the ethmoid cells. His patient was operated on with subsequent loss of vision. Van Gilse[21] reports a case in which the patient in the course of a coryza underwent a loss of vision in the right eye with pain, right-sided headache and slight swelling, slight peripheral restriction of the visual field, central scotoma for white and color, enlargement of the blind spot for color, and an absolute annular scotoma. Removal of the middle turbinate was followed by a narrowing of the scotoma; opening the posterior ethmoid cells had no influence on the eye symptoms; incision of the sphenoid one week later gave no improvement of the eye. When the frontal sinus and anterior ethmoid cells were opened three weeks later, the frontal sinus was found to be healthy; one ethmoid cell was filled with mucopus. On the day following operation, the exophthalmos had practically disappeared, as also the annular scotoma. This is one of the cases clearly demonstrating the fact that many sinuses may be involved without being entirely responsible for the condition of the eye; the symptoms in this case showing no marked improvement until after a solitary anterior ethmoid cell was opened.

W. L. Meyer[22] reports a case of bilateral central scotoma, in which he opened the right and left ethmoid cells, on account of the profuse nasal secretion, with no definite pathologic findings; vision first improved, then became slightly aggravated on the right side.

In considering this symptom, we are led to believe that the field for white and color is very frequently markedly significant, pointing to more definite location of the nasal trouble; bitemporal hemianopsia naturally pointing to a sphenoid involvement. The field could be easily explained if we considered the symptom to be due solely to pressure, as the anatomic structure of the different orbits might be such that pressure was not equally applied, thus causing a restriction of the nerve at different points. Many investigators have shown that the sphenoid cavity is of such irregular shape and location that it could cause, in addition to a temporal, a bitemporal hemianopsia. It would be natural that a sphenoid cavity could be so placed that it would cause a temporal or bitemporal hemianopsia.

CENTRAL SCOTOMA

The most definite sign, and one on which most reliance can be placed, is that of central scotoma, the process, no doubt, being the formation of the central scotoma which, in time with the increased pressure, causes a restriction of the field. Central scotoma was reported in twelve cases, it being the only symptom in one case reported by Fuchs,[23] which was due to involvement of the ethmoid and sphenoid. However, Panse[24] reports a patient with left-side amblyopia, with light perception, who had been unable to see for eight days; the left pupil was larger than the right, sluggish in its reaction, optic papilla and retina slightly blurred; the middle turbinate was removed with slight improvement as a result. In this case a central color scotoma was never demonstrated; a Wassermann was positive, but, in spite of the syphilitic base, a nasal operation induced a temporary improvement.

Jessop[25] reports a case of a small color scotoma for red, associated with exophthalmos, in which he found an endothelioma on the greater wing of the sphenoid.

ENLARGEMENT OF THE BLIND SPOT

Enlargement of the blind spot has been so recently brought to our notice that sufficient data have not yet been accumulated from which to judge its value. In addition to Van der Hoeve's claim, de Kleyn[26] looked for this symptom in a large number of nose cases in his clinic, in diseases of the nose and the anterior sinuses, but found a normal blind spot for white and color. Whereas, in fifty-two cases of disease of the postnasal accessory sinuses, an enlargement of the blind spot for white or color was noted in forty-six cases of extensive posterior ethmoiditis or sphenoiditis, in all cases the eye symptoms were much improved, the majority entirely cured by nasal treatment. Van Gilse[21] in his case reports it. Dubois[2] failed to find it in a case of left-sided papillitis with negative nasal findings. Panse[24] reports a case of bilateral disturbance of vision, in which the optic papillae were congested; the visual field showed enlargement of the blind spot; no unusual findings in the nose, but the middle turbinate was removed and the ethmoids exposed. Three weeks later vision was improved to 5/6 and 5/8, optic disk normal. Recently Onodi[27] has given statistics on 100 cases from his clinic in Budapest. Among 70 accessory sinus empyemas, ocular changes were present in 47 cases; negative findings in 23; central scotoma was present 6 times, 3 times bilateral; 1 combined with an enlargement of the blind spot, and 2 with optic neuritis; enlargement of the unilateral scotoma occurred in 3 cases of empyema of the maxillary sinus and the ethmoid cells, bilateral scotoma in a case of empyema of the ethmoid cells, the sphenoid sinus and frontal sinus, respectively. Enlargement of the blind spot was present 38 times; 28 times alone, and 6 times associated with central color scotoma. Narrowing of the visual field occurred once. In bilateral empyema, the blind spot was enlarged, but only on one side in part of the cases. In unilateral empyema, enlargement of the blind spot was noted 11 times on the same side, and 7 times on the contralateral side.

Marbreiter[28] reports 100 cases of empyema examined in two years in the nose and throat clinics of Strassburg. When possible, the examination was made before and after the operation. Enlargement was always more frequent for color than for white. Her cases do not agree with those of Van der Hoeve

20. Gutmann: Augensymptome bei Erkrankungen der Nasen-Nebenhöhlen, Centralbl. f. Augenh., 1910, xxxiv, 103.
21. Van Gilse: Ein Fall von Entzundung der Nassennebenhöhlen mit Neuritis retrobulbaris, Internat. Centralbl. f. Laryngol. u. Rhinol., 1911, xxvii, 601.
22. Meyer: Ueber die ophthalmologische Diagnostik der Erkrankungen der Nasennebenhöhlen, besonders der hinteren, München. med. Wchnschr., 1912, No. 52, p. 2888.
23. Fuchs: Case of Eye Disturbance in Accessory Sinus Disease, Lehrbuch der Augenh., 1905, Ed. 10, p. 766.
24. Panse: Die Heilung retrobulbären Erblindung durch Nasen Operationen, München. med. Wchnschr., 1912, No. 52, p. 2887.
25. Jessop: Two Cases of Proptosis Associated with Diseases of Ethmoid and Sphenoid Respectively, Tr. Ophth. Soc., 1903, xxiii.
26. De Kleyn: Affections of the Accessory Sinuses, and That It is the First Symptom Which Appears in the Eye, Arch. f. Ophth., 1910, lxxv, 513.
27. Onodi: Ueber die Okulo-orbitalen-Komptiketionen nasalen Ursprunges, Pest. med.-chir. Presse, 1914, Nos. 19-20, p. 150.
28. Marbreiter: Zischr. f. Augenh., April-May, 1914.

and de Kleyn, who consider the presence of enlargement of the blind spot indicative of empyema of the posterior sinuses. She found it many times in diseases of the anterior sinuses. This symptom, unquestionably, has great possibilities as a diagnostic point, which will be shown by further investigation.

Recently Loeb[29] has reported a case of scintillating scotoma, cured by operation on the ethmoid sinus.

CAUSE

Hajek[30] recently said that the teaching of a common rhinologic origin for retrobulbar neuritis did not rest on a solid basis so far as actual proof is concerned. He has repeatedly obtained temporary improvement after opening the ethmoid labyrinth, without pathologic findings, but he has also frequently had no success at all. In some of the cases, assumed to be those of rhinologic origin, in which he had decided to operate, spontaneous cure occurred in the course of time. Other patients who were operated on became totally blind after a transitory improvement.

Baumgarten[31] reports a case in which the patient suddenly became blind in the right eye with normal ophthalmic findings, in which, on removal of the middle turbinate and opening the sphenoid, he found nothing but thickened mucosa. In the same paper he reported a case in which the patient had loss of sight in one eye within three days. Four months later pressure atrophy of the optic nerve was seen; removal of the ethmoid bulla and incision of the anterior sphenoid wall showed only thickened mucosa. Subsequently more posterior cells were exposed, with improvement of vision. The thickened mucosa in this case shows that there must have been some inflammation existing. It is extremely doubtful on opening a cavity of this character, with the amount of blood occurring during an operation, that one can always tell the presence of a small amount of pus, and a small amount is all that is necessary to do mischief.

De Schweinitz,[32] speaking of edema of the lids from maxillary sinus disease, says that if the disease is of long standing, it assumes a positively brawny consistency, showing, no doubt, a cell proliferation. He quotes Dr. Walter Williams in saying that he has seen edema of the lids when only a few drops of pus have been in the cavity of the antrum.

Various theories have been expressed as to the cause of this form of amblyopia—pressure, circulatory disturbance and toxemia. That pus alone is not responsible for the condition is shown by Hajek and Baumgarten's report, and that the same condition of the eye may be caused by a noninfectious growth is illustrated in articles previously quoted in this paper. The one theory that seems to fit all cases is that of pressure. This pressure may be of two kinds, gradual and sudden; sudden pressure, which I believe is illustrated in my three cases, is no doubt due to the sudden rupture of the bony wall separating the sinus and the orbit without rupture of the periosteum, thus bringing immediately direct pressure on the orbit and its contents, causing disturbance of the functions of the nerves and interference with the circulation. The gradual pressure is, no doubt, due to the inflammatory condition, suppurative or nonsuppurative, being transmitted from the sinus to the orbit with or without infection, possibly enlargement of the vessels with cell proliferation. It is doubtful whether the toxins are directly responsible for the central scotoma, but they no doubt play an important part in producing a low-grade cellulitis. This theory is borne out by de Kleyn and Gerlach's[33] postmortem study of a case of empyema of the maxillary sinus with erythema, intense conjunctiva and edema of the lids, in which they described a circumscribed infiltration just opposite the sphenoid sinus, and continuation of the infiltration toward the septum along a vein, an interstitial optic neuritis with numerous vacuoles in the optic nerve.

I believe we can safely say that all the symptoms enumerated can be ascribed to the same cause, one being simply a different degree of the other, the primary stage being a slight involvement, the maximum stage represented sometimes by orbital abscess or direct infection. Other cases in which there is no orbital infection and a loss of vision coming on after slight improvement, to my mind show the shrinking which takes place after the cause is removed, which shrinking causes constriction of the optic nerve. If we accept this theory, it not only explains this condition, but explains many cases of muscular asthenopia, and possibly, many cases in patients who have defective central vision, which has been ascribed to amblyopia ex anopsia.

ABSTRACT OF DISCUSSION

Dr. James W. Dunn, Cairo, Ill.: Oculists have long been intimately acquainted with the important rôle affections of the frontal and maxillary sinuses play in the production of disturbances of vision. This is not surprising when we recall the comparative ease with which diseases of these cavities are diagnosed and the more or less prominent symptoms such as displacement of the eyeball and interference with its motility associated with pathologic conditions here that have broken over into the orbit. Not until recently, however, have we endeavored to learn fully the part affections of the ethmoid cells and the sphenoidal sinuses play in producing visual disturbances. Investigation has now taught us that a few bilateral and many unilateral cases of obscure interference with vision are dependent on diseases of these latter cavities.

The relations existing between the optic nerve and the posterior ethmoid cells, the sphenoidal sinus and the posterior part of the frontal sinus are not constant. Usually the sphenoidal sinus bears the most intimate relation to this nerve, but at times the latter may be almost completely surrounded by a hyperdeveloped ethmoid cell. Again, the intimate relation existing between the optic nerve and the sphenoid sinus and ethmoid cells on account of the thinness of the bony plate intervening in normal conditions may be made more intimate by the failure of complete development of this partition. Thus the liability of the nerve to injury from pressure in all cases of disease in these cavities is increased occasionally by congenital dehiscences. Thus also is the nerve made liable to direct involvement through continuity of tissue. Unilateral central scotoma, enlargement of the blind spot and postoptic neuritis are significant of disease of the posterior ethmoid cells and sphenoid sinuses. This is particularly true if there are no indications of central brain lesion, no external ocular manifestations, and no ophthalmoscopic evidences in the case.

29. Loeb: The Influence of the Nose on Eye Affections as Evidenced by a Case of Bilateral Blindness and One of Unilateral Scintillating Scotoma Cured by Operations on the Ethmoid Cells, Tr. Am. Laryngol. Assn., May, 1914, p. 157.

30. Hajek: Affektionen der Netzhaut und des Sehnerven, Pathologie und Therapie der entzundlichen Erkrankungen der Nebenhöhlen der Nase, 1915, p. 422.

31. Baumgarten: Sehstörungen durch Affektionen der Nase bedingt, Monatschr. f. Ohrenh., 1910, xliv, 1053.

32. De Schweinitz: Diseases of the Eye, Ed. 7, p. 788.

33. De Kleyn and Gerlach: Arch f. Ophth., lxxxiv, 164. Ophthalmic Year Book, 1913, x.

All the cases reported by the essayist are visual disturbances from empyema of the ethmoid cells. That the seat of trouble was in the posterior cells in Case 2 is patent from the report. This is not so evident from the reports on the other two cases. When, however, we recall the slight interference with motility and the absence of displacement of the eyeball in these cases we are justified in concluding that these were similar to Case 2. Indeed, it seems probable that Dr. Stark would have found more conclusive evidence in his examinations than he did had it not been that these were the cells causing the eye complications. My conviction is that, generally speaking, those cases of interference with vision from diseases in the frontal and maxillary sinuses are easy of diagnosis, but the really puzzling ones are those from affections of the sphenoid sinus and posterior ethmoid cells.

Of the fifty-two cases of involvement of the optic nerve collected by the essayist, in forty-two the seat of the trouble was either the ethmoid cells or sphenoid sinuses, or both. This is in accordance with what we would suppose from the anatomic facts brought out.

DR. OTIS ORENDORFF, Canon City, Colo.: The case I wish to report is of especial interest for the reason that it is complicated with neurasthenia and dental disturbance. I was wrestling with the case just at the time I received a copy of the paper by Dr. Stark. May 11, 1915, Mrs. H. C., aged 27, housewife, mother of three healthy children, always enjoyed reasonably good health, but for several years was subject to numbness in left side which her physician attributed to hysteroneurasthenia; had slight pyorrhea; subject to headache for years, aggravated by stooping, etc., as well as on fixation; no history of catarrh or throat trouble, but a slight mucous discharge and sneezing for one month. This would not be of diagnostic importance for the reason that it occurred in the hay-fever season. Vision failed suddenly in the right eye the day before the consultation. The pupils were both slightly dilated and sluggish; right worse; right eye turned out and up occasionally and patient complained of diffuse haziness and deep tenderness, and at times there was slight injection. The ophthalmoscope showed in the right eye possibly slight haziness but a normal fundus could be distinctly made out; the left a little retinal hyperemia. Refraction: Right .1/10 not improved. Left, $8/10 - {}^{1}+.50 = 8/10 - {}^{1}$, May 13, 1915, refraction and examination under homatropin with the same result. She was advised to consult a dentist, who reported the upper wisdom teeth unerupted and severe pyorrhea of the first lower right molar, this tooth being very loose, but there was no tenderness or indication of retained pus about the teeth. May 15, pain on movement and deep pressure in right eyeball. Right vision reduced to fingers at 6 feet. Ophthalmoscope still negative; pupil more dilated and practically no reaction. Although the nose had appeared normal, cocain and epinephrin were now applied, which revealed a little bulging in the right ethmoid and an enlarged middle turbinate pressing on the lateral wall of the left cavity. However, these conditions were not so marked as in other noses in which they give no trouble whatever. There was a small drop of pus very high in the right cavity. Suction and posture brought no more. There was not sufficient vision in the right eye to take the fields, but in the left eye they were normal.

A competent internist reported positively that there was no general condition that would account for this woman's trouble and insisted that the disease was hysteria. I now made a tentative diagnosis, acute retrobulbar neuritis secondary to an acute ethmoiditis, and promptly opened up the anterior ethmoid and found plenty of pus in the upper portion, but none in the lower cells. For some reason there was a serious hemorrhage. Recovery was uneventful. Examination, May 18, showed R.V. 1/10; May 20, R.V. 3/10; May 24, R.V. 5/10; June 8, R.V. $8/10 - {}^{4}$, L.V. 8/10. Incidentally the right third molar was appearing. Fundi normal. The patient noticed that clearing begins at the upper part of the field. While the rôle that the teeth are playing in this case is uncertain, there can be no doubt that the chief etiologic factor can be found in the ethmoid sinus.

DR. HANS BARKAN, San Francisco: I have seen some cases which simulate these, one this year and five or six before that, which are of special interest. The first was a case of sudden blindness in a young person; such cases occur most frequently in young people. They proved to be in all multiple sclerosis. This condition should always be borne in mind in seeing a one-sided blindness or occasional bilateral, complete and acute in its onset, with or without some involvement of the nerve. We do not need the usual classical triad, namely, scanning speech, tremor and nystagmus, any more to diagnose multiple sclerosis. A missing patellar reflex, a one-sided corneal anesthesia or absent abdominal reflexes, for instance, are enough to be at least suspicious, especially when combined with an acute retrobulbar neuritis. Three of the cases I have seen have been accompanied by considerable headache; practically all of them have cleared up in four or five days from blindness to practically normal vision by rest and sweating. It is of particular interest to me that some of these patient came saying that they had had these attacks once or twice before, but that vision had returned in a few days and they had not bothered to see an ophthalmologist. Since hearing Dr. Stark's very interesting paper I have felt still stronger about this question of mapping out the blind spot. I consider it of practically no value unless done by Bjerrum's method. There are certain points to be observed in taking it. The patient will give a somewhat smaller blind spot when the object is led from within the blind spot outward than if from the periphery toward the blind spot. There is another point I have not seen mentioned which was pointed out to me some years ago; in examining the fundus we know that the course of the vessels from the disk outward varies considerably; in some people they run more grouped together than in others. In this case if the mark be led toward the blind spot along the direction of these vessels a blind sector corresponding to them will often simulate an enlargement. I personally believe the value of this method in these cases to be problematical.

DR. WALTER R. PARKER, Detroit: Anatomically the accessory sinuses offer the greatest possibility for optic nerve infections. Clinically, however, the proof of the sinuses being the sole etiologic factor in any given case is comparatively rare. The coexistence of optic nerve lesions and sinus infections does not necessarily prove a causal relationship. The possibility of some general disease being responsible for the changes in the nerve should not be overlooked. Three or four years ago I saw a case of retrobulbar neuritis in a patient with sinus infection in which the neural diagnosis was hysteria. Eighteen months later she showed unmistakable symptoms of multiple sclerosis. The examination of a case of optic neuritis is not complete which does not include that of the rhinologist. Only by reports of carefully prepared cases, such as the author has given us, will this subject be cleared up.

DR. ROBERT W. MILLER, Los Angeles: It has been my fortune to deal with quite a number of these cases in the past few years. I have also seen a few cases of optic neuritis due to diseases of the teeth. In conferring with specialists in other sections I find that many of them are accustomed to see these cases with a considerable, and perhaps rather increasing, frequency. Some competent observers in Chicago, where we would expect to find frequent occurrences, do not find them very often. We note what Dr. Parker has just said as to the infrequency of such cases in his experience. My impression is that if we look for them more constantly, we shall find them more frequently. It is but a very little step from the cases of sudden blindness to those which develop more gradually. More gradual development of blindness has been the rule in the majority of cases I have seen. One or two of the speakers have mentioned the importance of the general health, and I would emphasize the necessity of carefully bearing in mind the influence of general diseases and the ability to recognize all forms of disease. We should often invoke the aid of the Roentgen ray in diagnosis.

In the treatment there are two points to be especially borne in mind. In the young patients whose tissues are soft and easily influenced, in whom we have not a great amount of hypertrophy of the bony structure, it is an excellent way to put them to bed, employ local and general therapy, including hot baths, and we often secure improvement or recovery without surgical intervention. When we have made up our minds that we are dealing with a surgical case, it will be preferable not only to remove the anterior end of the middle turbinate body, but do a partial or practically complete exenteration of the ethmoid labyrinth. This insures drainage, instead of leaving the matter in doubt. The well-known variability or lack of uniformity of the ethmoid structures in different skulls, together with the fact that we are dealing with a condition of retention, seem to me to fully justify this view.

DR. W. H. ROBERTS, Pasadena, Calif.: Some years ago I did a combined extraction for cataract on an old man, with good results. About a year following the operation he came in saying he could not see with the eye operated on, and gave a history of having contracted a severe cold some six or eight months previously. He had had deep-seated pain on the side of the affected eye. After some weeks' duration he had a discharge of pus from the nose which relieved the pain, but the vision of this eye was entirely gone. The ophthalmoscope showed optic atrophy. A sphenoidal abscess had caused pressure on, and atrophy of, the optic nerve.

DR. E. H. CARY, Dallas, Tex.: The question of nasal pressure, per se, in the sinuses producing the blindness described by Dr. Stark does not seem the correct explanation to me, for we have symptoms ranging from slight vasomotor disturbances to blindness occurring in people who have nasal defects, hypertrophic and cystic middle turbinals giving nasal pressure with adhesions, as well as ethmoidal disturbances where there is neither pus nor secretion. I think it is wise and opportune to report such cases and to relate all such observations with the idea of bringing the ophthalmic point of view back to the relation between the nose and the eye. The eye and ear hospitals, which have magnified the importance of these organs to the exclusion of the nose, have materially lessened their students' chances for correct view of the whole. There must be more than mere interchange of ideas; the ophthalmologist must know the nasal possibilities. Having been trained as an ophthalmologist, no one ever charged more cases of iritis and associated eye disorders to syphilis than I have, but syphilis can be thrown out as cause in many cases, similar in type, yet differing sufficiently for an observer to be able to place the responsibility where it belongs. An ethmoidal, turbinal, or nasal ridge, either or all the cause of a nasal reflex, is easily and promptly curable.

A schoolteacher gave a history of recurring attacks of an extremely painful left eye where the vascular let down was marked; some exophthalmos was noticed and vision had been reduced to 2/200. Such attacks occurred at intervals over a period of two years, made more violent by a cold. When seen the blood vessels of the deeper structure in and around the globe near the inner canthus and lower lid gave the typical appearance the vessels always have when a nasal reflex is at fault. Intra-ocularly the patient had a detached retina, and this was the first case I had ever seen which in any way clinically backed up the theory that detachment was due to faulty secretion of fluid of the ciliary processes. Hence, in operating on the nose for the cause, I refused to trephine for retinal condition and awaited results. Within two weeks she had absorbed the fluid back of the retina sufficiently to see 16/70. The history of the case was that the retina had been detached for two years, whereas here we had a suppression of secretion, due evidently to delayed or interrupted impulses governing the ciliary body and processes. I have seen secondary glaucoma produced from too many impulses, or an exaggeration of secretion, and relieved from this same cause, by the use of similar operative procedures.

DR. H. H. STARK, El Paso, Tex.: I found the blind spot enlargement of such a conflicting nature that I feel one is unable to judge of its diagnostic value without further investigation, and as Dr. Barkan says, it is hard accurately to determine. I was waiting for some one to bring up the question of multiple sclerosis in such cases, as did Dr. Parker. The eye symptoms of this disease are so much like the cases I have reported that I feel it quite possible for nasal sinus suppuration to be an etiologic factor in sclerosis of the brain and spinal cord. Dr. Cary speaks of a case of detached retina. In the literature collected for this paper, I find one case of blindness due to retrobulbar neuritis, which was caused by sinus suppuration. This patient had a detached retina, but the blindness was due to the pressure on the optic nerve and orbital contents, and the cause of the detached retina was considered the same. This case was not included in the report, as only clear cases of retrobulbar neuritis without complication were tabulated.

POSTOPERATIVE DETACHMENT OF THE CHOROID

WITH ESPECIAL REFERENCE TO ELLIOT'S OPERATION FOR GLAUCOMA *

HANS BARKAN, M.D.
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I have chosen to present this subject because, apart from the articles by Marshall and Hudson in the English ophthalmic literature, there are none but isolated case reports to be found in the American; and because I have paid particular attention to its occurrence, especially in postoperative cataract and glaucoma cases, since my attention was first called to the occurrence of postoperative detachment of the choroid in the clinic of Professor Fuchs.

There are, broadly speaking, four classes of detachment: (1) tears of the ciliary body with the aqueous percolating into the suprachoroidal space; (2) traction on the choroid and retina by organizing masses in the vitreous; (3) hemorrhage in and beneath the choroid from ruptured vessels; (4) inflammatory detachment. *Restitutio ad integrum* is possibly only in the first group, and this group, whether due to tears of the ciliary body, as Fuchs believed, or to the causes which are to be described later, is the only group to be considered under the class of postoperative detachment.

According to de Wecker (Graefe-Saemisch Handbuch) von Ammon first observed the condition, succeeded by Stellwag von Carion, Virchow and Iwanoff; these all being postmortem observations. The first clinical description we owe, as we do so many others, to von Graefe; the first clinical description and postmortem examination in the same case to H. Knapp, who diagnosed detachment of the choroid, believing it due to an underlying tumor. Necropsy findings, however, showed a collection of serous fluid.

Reuling and Marshall both gave early anatomic descriptions of the condition. Fuchs, in 1900, wrote the first classical monograph on the subject, in which he mentions that only ten cases have been reported since Knapp's case in 1868. The occurrence of a few cases in the clinic directed his attention to the matter and careful observation by himself and his assistants of all postoperative cataract and glaucoma cases in the next few months established the fact that postoperative detachment of the choroid in these cases was nothing unusual and seemed to occur with about equal fre-

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quency, whether the case was one of simple extraction or glaucoma iridectomy.

The opinions as to the nature and origin of the ophthalmoscopic findings in the cases reported before Fuchs' study are the following: Haab believed them to be cysts and explained their rapid disappearance to the bursting of the cyst wall. A cyst, however, could not grow in a few days to a considerable dimension because the delicate tissue of the retina would tear. In addition, the visible protuberance would disappear instantly after the rupture of the cyst, which it does not do. Finally, the practically retained function of the retina at the place of detachment speaks against the cyst theory. Velhagen believed them to be cyst-like detachments of the epithelium of the ciliary body. With the great expanse of the choroidal detachment, the epithelium would have to be detached not only over the ciliary body but further backward over great areas of the choroid, which, in view of the slight attachment of the epithelial cells to each other, is not to be thought of. Lindemann believed that he was dealing with swollen and blood-stained cortical masses in the vitreous after extraction. This view is entirely in contradiction with the appearance of the choroidal detachment, as well as with the fact that after iridectomy and glaucoma operations, absolutely similar detachments are to be seen. These various theories existed until Fuchs' classical description in which he so depicts the occurrence of choroidal detachment that I will simply quote his description.

> We are dealing with cases of senile cataract. . . . The course of the operation is usually a normal one, the same being true of the course of the healing in the next few days. . . . However, if the anterior chamber is shallow, it has disappeared entirely without there being any sign of rupture of the wound or filtration of the scar. Simultaneously, the eye is soft. Focal illumination, as well as the inverted image, will disclose the detached parts of the choroid projecting in hemispherical form into the vitreous. This detachment may take place soon after the operation, or may take place a few months afterward. It progresses to a certain height and then very quickly—within a few days—it recedes, the anterior chamber at the same time becoming deeper and the tension of the eye again becoming normal.

With lateral illumination, the hemispherical projections are of various shades of yellow and brown without visible vessels on the smooth surface, without folds and without movement. If examined in the inverted image, the choroidal detachment appears very dark, sometimes almost black, and if it be a very flat one, it can be diagnosticated only by the appearance of a dark shadow, the border of which forms a convex line posteriorly.

In 318 extractions with iridectomy the percentage of choroidal detachment was 4.4; in 175 without iridectomy 5.1 per cent., and it was to be noted that in the cases of detachment, one-fourth were complicated extractions in the sense that there was either vitreous loss, or cataract delivered in the capsule. In 111 iridectomies for glaucoma the percentage of detachment was 10. In examining some of these eyes which had previously been operated on for cataract, Fuchs found tears of the ciliary body in enough cases to make him feel that aqueous percolating through these tears into the suprachoroidal space could very well account for the choroidal detachment; that this does not happen immediately after the operation he explained by mentioning the possibility of the tears being, in the first few days, filled with blood and coagulated serum. That this explanation will not necessarily fit all cases is evident from the fact that in many operations after which choroidal detachment has occurred, no instrumental interference with the angle of the chamber or of the iris has taken place at all; and yet choroidal detachment has taken place.

Meller (1911) believes as Fuchs does that the detachment is caused by aqueous beneath the choroid, but traces the path of the aqueous in a different fashion; instead of as Fuchs does, through the pupil, anterior chamber, and tears in the ligamentum pectinatum into the suprachoroidal space, through the ciliary body directly into the suprachoroidal space. Aqueous is secreted in greatly increased quantities after operations and he believes that under certain conditions, possibly due to the nonrupture of the ciliary epithelium, some of this aqueous forces its way back through the ciliary body directly beneath the choroid.

Marshall's earlier view—serous exudation from choroidal vessels, and Hudson's later view and the result of his pathologic examinations—correspond well and seem to suit most cases more completely than either Meller's or Fuchs', though the probability cannot be denied that the mechanism of Fuchs as well as that of Meller may by itself cause an *ablatio* in certain cases and may form a contributing cause at least in some percentage of the entire number. Marshall and Hudson believe that the serous exudation arises from the choroidal blood vessels, particularly from the thin-walled choroidal veins, and that under conditions of abnormally low intra-ocular tension, an abnormally free transudate of fluid from these vessels occurs, which again stops when tension is reestablished. That an abnormally low tension is a necessary coincidence with choroidal detachment is plain from clinical observation as well as from the pathologic findings of Hudson. The microscopic evidence of pronounced edema of the ciliary body, which we would expect to find if the aqueous transudated directly downward, is lacking, and it does seem that the anatomy and construction of these parts is such as to form an effectual barrier to the passage of fluid from the region of the processes to the suprachoroidal space. The objection to the ideas of Fuchs has already been mentioned.

In a series of 574 pathologic examinations of eyes which had clinically been of low tension and which included perforating injuries, shrunken globes, corneal ulcers and iridocyclitis, it is to be remarked that tension when noted, as it was in approximately 90 per cent. of the cases, was found low in every one which pathologically showed a detachment. (It is not stated, however, whether these tensions were taken with a tonometer.) Meller himself asserts that the eye is not soft because there is a choroidal detachment, but because there is a leaking spot in the eye from which aqueous is constantly sickering. The choroidal detachment has only taken place because the eye has become soft and one cannot therefore say that the eye stays soft as long as the choroidal detachment persists, but that the choroidal detachment persists as long as the eye stays soft. In this way, it is to be understood why the choroidal detachment increases in size; when the opening in the chamber shuts, normal tension is reestablished, the secretion of aqueous sinks to its normal amount (its excess secretion having been, in Meller's opinion, the direct cause of the detachment; in Marshall and Hudson's opinion, the excess secretion from the choroidal veins having been the cause) and with

establishment of this normal tension, the choroidal detachment disappears. There has never been a case noted of disappearance of the *ablatio* while the chamber remained shallow.

If we grant the universality in some degree of choroidal detachment in all cases of marked and quickly occurring low intra-ocular tension, and I personally am inclined to do so, because in every condition of decreased tension the eye will in some fashion attempt to restore its equilibrium, and is, I believe, more likely to do so by excessive fulness of the choroidal system of veins than by any other means: then tears in the ligamentum pectinatum must be looked on as accidental complications rather than the usual cause for the detachment.

Fuchs says in his argument against active exudation as the cause of the detachment, "An active exudation cannot be brought into relationship with a decrease of tension." Not in a closed globe, certainly, but in one in which there is an abnormally rapid escape of fluid by abnormal channels, an exudate of any kind or consistence can form with no relationship whatsoever to the tension.

Heine's operation of cyclodialysis offers a striking illustration. In his many cases he has observed choroidal detachment only once. Yet here is the ideal tear through the ligamentum pectinatum and a detachment of the ciliary body. It is true that pathologically studied, these eyes have shown that the tears are very rapidly filled with blood and within a few days fibroblasts appear and active tissue and scar formation obliterate the path of the spatula. Here again we have no choroidal detachment, I believe, because there is no sudden reduction in tension. In the great majority of eyes in which choroidal detachment is observed, there is a decisive lessening of the volume of the eye with the advancement of the iris and lens diaphragm, and of the vitreous, added to a certain amount of scleral rigidity, and large and abnormal channels of outflow for the aqueous—all factors in low tension. We know too that the more sudden and the greater the change in tension the more frequent is choroidal detachment; in cataracts about 4 or 5 per cent.; in glaucoma iridectomies about 10 per cent.; in the Lagrange sclerectomy about 20 per cent.; finally, in the Elliot, from 10 to 15 per cent.

Schur, in 1913, made the first reference to choroidal detachment in Elliot's trephine operation, closely followed by Paderstein. Since then, single case reports of its occurrence in Elliot's trephine operation have been published, and Elliot himself mentions its connection with his operation very briefly in the book dealing with his operation. Now, it has struck me in reviewing the American literature, that this most interesting detachment of the choroid after cataract and glaucoma operations is seldom noted clinically; Elliot glaucoma operations have been reported frequently in the last two years, the cases varying in number from case reports of six or ten to case reports of twenty or thirty. Some of these papers describe in detail both operation and the course of healing, and yet in very few instances is the occurrence of an *ablatio* mentioned. Knapp, however, in 20 cases noted it three times; in two, hypotension existed for from six to eight weeks; Quackenboss also mentions the late reestablishment of the anterior chamber and choroidal detachment in one case: but, in the main, it is conspicuous by its absence in the history of the cases; and yet we know from Meller's statistics, and I know personally from examination of a goodly number of these cases, that choroidal detachments occur in from 10 to 20 per cent. of glaucoma operations.

Now it is true that these detachments can be and often are evanescent; that they often occur as early as the second or the third day after the operation; that they may exist for only two or three days; and perhaps the fear of early postoperative examination of cataract and glaucoma cases has kept us from noting this condition more frequently. I have never seen untoward events happen in the examination for choroidal detachment the day following operation, by projecting through the pupil the light of a Priestly Smith lamp by means of the plane or convex mirror of one's ophthalmoscope, and asking the patient slowly to look down, upward, right and left. This, moreover, need not be done if the chamber is not shallow, for if the chamber is not shallow, there is no choroidal detachment. The number of chambers remaining shallow or entirely absent, especially in a well-performed Elliot operation, is numerous, and in practically every one of these choroidal detachments can be detected.

I have had the opportunity to observe eyes operated on by Elliot's method from the day of operation to the day of dismissal from the hospital in a comparatively large number of cases—175. These were all operated on with as large an iridectomy as we could obtain. The tension of the eye before operation did not seem to affect the frequency of choroidal detachment after trephine. Of those that showed detachment, as many were of a tension of 30-35 mm. as were of 40-50 mm The percentage of detachment was 9. In all of these the chamber was very shallow or entirely absent. In many cases, the patients were sent home without the chamber having reformed and were not seen again. Vision was not interfered with and was as could be expected from the general condition of the eye. On the day of dismissal, the field of vision in 120 of these cases was recorded (the others for some reason—glaucoma absolutum, small fields, stupidity—could not be taken) and the area corresponding to the choroidal detachment was found in the fourteen cases observed to be no different than the one taken before operation. In one case, while the object was seen, it was described as being very blurred. Twelve of the detachments occurred on the temporal side; two on the nasal side; and one superiorly. None was seen on the inferior aspect, an observation which agrees practically with the location of the detachment in cataract operations as described by Fuchs. The area of the trephine opening in all these cases was marked by a pellucid, thin, rather protuberant conjunctiva, depressed easily with a spatula, and undoubtedly draining very freely. That this was in direct connection with the detachment is certain.

Meller has reported the only case of recurring detachment in Elliot's operation: it recurred six months after the operation, the scar being extremely cystoid; no direct rupture could be ascertained. The eye was very much softer than usual at dismissal and the patient complained of a sudden blur of vision. This patient, as all the others, recovered in a few weeks, the chamber reforming.

In the cataract and glaucoma cases observed by me in Lane Hospital—thirty-two cases of cataract, sixteen of glaucoma—choroidal detachment occurred in the former in no case, in the latter in two cases. I attrib-

ute the absence of detachment in the cataract cases (though the total number of cases is of course too small to draw any general deductions), to the fact that our cataract patients are kept flat on the back with both eyes bandaged longer than in the European clinics, where, as in Fuchs' clinic, it is the habit to get the patient up the day after operation. There, in my daily rounds among from forty to fifty cataract and glaucoma cases, shallow chambers, usually without external signs of rupture of the wound, were not at all an unusual thing to find on the third or fourth morning and were regarded rather lightly; and, in fact, seldom had deleterious consequences.

In conclusion, I would state:

1. Clinically demonstrable postoperative detachment of the choroid takes place after cataract operations, with or without iridectomy, in about 4 per cent.; in Elliot's trephine operation, in about 10 per cent.; in Lagrange's sclerectomy, in about 20 per cent.; it does not occur in linear extraction, or simple iridectomy.

2. The sine qua non for its existence is low intraocular tension, caused by abnormally rapid escape of aqueous through the wound, extending over some interval.

3. The chamber is not shallow or absent because of the detachment; the detachment is secondary to the condition of the chamber.

4. The fluid responsible for the detachment is derived, probably, from the choroidal blood vessels, and not improbably from the veins.

5. Choroidal detachment is of relatively frequent occurrence after Elliot's trephine operation, and should, if for statistical purposes only, be looked for, and its occurrence noted in all cases of Elliot's operation.

ABSTRACT OF DISCUSSION

DR. W. H. ROBERTS, Pasadena, Calif.: Dr. Barkan has called our attention to a fairly frequent sequel of operations for cataract and glaucoma. Postoperative detachment of the choroid has undoubtedly been overlooked by the majority of eye surgeons, as so few have made note of it. Fortunately, such detachment has but little clinical significance, as the choroids all become reattached, whether recognized or not, and no treatment is required. The cause of the detachment is purely speculative, as is the source and course of the fluid, as Dr. Barkan has pointed out. Lowered tension, the result of a leaky anterior chamber, is probably the chief cause. This would appear to be proved by the more frequent detachments of the choroid in operations favoring aqueous drainage and in direct proportion to the quantity escaping. Following cataract operations Dr. Balkan reports 4 per cent. to 5 per cent.; following broad iridectomies for glaucoma 10 per cent.; following the Elliot trephine operations or sclerostomies 15 per cent.; following Lagrange sclerotomies 20 per cent. Just how the fluid reaches the suprachoroidal space cannot be positively determined. Dr. Barkan has mentioned several theories. One that he did not refer to is a cyclodialysis caused by postoperative traction on the iris, following the iridectomy, which enables the anterior chamber to empty itself into the suprachoroidal space. Verhoeff, in a recent article (*Arch. Ophth.*, xliv, No. 2, p. 134) mentions a detachment as probably due to a cyclodialysis, in which he removed the eye, and on sectioning it, he says "no traces of a present or past cyclodialysis could be found, but no doubt a small one could have healed without leaving any visible trace." I doubt if it would be advisable for all operators, who find a postoperative empty anterior chamber, to subject their patients to such an examination as would be necessary to diagnose a detached choroid. It would subject the recently operated eye to more of a strain than would be good for it, and might cause the separation of the corneal section in cataract cases.

DR. J. M. RAY, Louisville, Ky.: The first case I saw I did not recognize as detachment of the choroid. It occurred in a cataract case in which on making the first dressing oblique illumination showed a brownish mass coming forward into the coloboma that at the time I thought was a detachment of the retina. In this case there were two mounds with a depression or valley between. I watched this carefully and studied it with the ophthalmoscope at my second dressing and could make out very well the elevations. To my surprise by the time the wound was well healed and the anterior chamber reformed the mass had disappeared. In 1909 soon after the trephine operation came into general use I saw a case with my associate Dr. Lederman in which there was a brownish mass to be seen through the peripheral coloboma and the man complained of inability to see below. After studying this case carefully I recalled the former case following the cataract operation, and the diagnosis then seemed easy. Soon after the trephine case I saw a third in which quite a brown mass was visible with the ophthalmoscope and the patient complained very much of inability to see below. In this latter case the mass did not seem to protrude forward as much as the first two cases. In the course of time all these eyes became good eyes. There was no further evidence of any detachment. They did not seem to interfere with the remedial effect of the trephine. Dr. Knapp in his book on "Ocular Tumors" reports and illustrates a case following cataract operation.

DR. FRANK C. TODD, Minneapolis: I am one of the many who have not observed their cases with the ophthalmoscope after operation, during the time when the detachment can be seen. Dr. Barkan made the statement that such a detachment has no clinical importance and I am wondering if that is positively true. I have trephined in seventy odd cases. I have observed a number in which the vision diminished after trephining, where the tension was reduced, and where the vision remained lower than normal. It occurred to me in reading Dr. Barkan's paper that this lesion might be present to so low a degree that it could not be observed with the ophthalmoscope. I have not made observations soon after the operation, but something of this kind may have taken place which accounted for the poor vision in those eyes with very reduced tension, and I would like to have Dr. Barkan's opinion as to this character of cases.

DR. HAROLD GIFFORD, Omaha: I must confess that I have overlooked a number of these cases. I know I have done this because it is only recently that I have begun to look for them systematically after dilating the pupil, and in about twenty-five trephinings I have found three detachments of the choroid, while in three times that number that I had done previously without subsequent dilatation of the pupil, I found only one detachment of the choroid. In one case the patient had a double detachment, one at each side. The reason for the frequency of this occurrence after trephining must be sought in the long continued hypotension. It cannot be due to the traumatism; that is, to the traumatic enlargement of the opening between the anterior chamber and the superchoroidal space; otherwise it would be more frequent after cataract extractions.

DR. EDWARD JACKSON, Denver: I have seen no postoperative detachments following trephining, but I have done only a few trephinings. Dr. Barkan dismissed in a sentence or two the subject of spontaneous detachment. I have one case that seems to have a natural place in this discussion. About eighteen months ago I saw a man who had been complaining of impaired vision for several weeks, and on making an examination with the ophthalmoscope found the choroid pushed forward in the region of the macula. Vision was reduced to 1/15 of normal, and the swelling gave the appearance of sarcoma. In six months the vision was 6/10 normal. He gave no history of injury

to the eye, although I made a very careful inquiry concerning this point. Spontaneous detachment is more frequent than we realize. This case certainly would not have been observed had it not involved the region of the macula.

DR. HANS BARKAN, San Francisco: In regard to Dr. Roberts' remarks concerning the danger encountered by the patient in undergoing an examination for detached choroid, I will say that in Europe where I accumulated the great majority of these statistics the examination, fortunately, is not considered so serious. I have, however, kept it up in a small number of cases and have found there is no trouble about it. Of course it is to be remembered that when the chamber is not shallow there is nothing to be gained in making the examination. Therefore, the number of eyes that you might endanger are confined to those cataract cases in which there is no chamber. Where there is at the end of twenty-four to thirty-six hours no evident external cause for the absent chamber there is absolutely no danger in making the examination. In regard to Dr. Ray's observing the valley between the choroidal detachment, there are two explanations for that—the choroid and sclera are firmly attached to each other and the suprachoroidal space is obliterated by an old choroiditis or that a vortex vein entering at the bottom of the valley should naturally hold down at this point the choroid. Dr. Todd's question rather sticks me. I can only say that in these cases in which there were fourteen out of 150, or 10 or 11 per cent., we did not notice any bad effects in the lowering of tension. Perhaps the bad vision in the cases he mentioned may have been caused by the axial myopia that took place and by the wrinkling of the cornea with its consequent irregular astigmatism. I certainly cannot explain it on the basis of the choroidal detachment.

In reply to Dr. Fenton, both Professor Fuchs and Professor Meller advocate that there is no logical reason why a patient should not be given the benefit of this saving operation in addition. Pathologically speaking, there are some very good reasons why the operation should be performed, and undoubtedly the trephine hole shows more tendency to remain open; as iris lying beneath it otherwise tends to form a substratum of connective tissue and adhesions block up the hole. Whether as large an iridectomy as was performed is advisable or not, I am not in a position to say. A great percentage of these cases came in a state of advanced glaucoma with high tension. Among the operations there were not as many incipient glaucomas as there were acute glaucomas and chronic inflammatory cases; therefore it was quite easy at that time to do as large an iridectomy as possible, as the high tension almost invariably caused a fairly large prolapse of the iris into the trephine hole.

In regard to the question asked, Heine's cyclodialysis of course seems the ideal condition for a choroidal detachment to take place, but Heine in his many operations noticed choroidal detachment only once; this I take as strong proof, in accord with Dr. Gifford, that it is the sudden lowering of tension which is responsible for the detachment; we note here that the tension is lowered only temporarily and not markedly.

Factory Inspection.—According to a statement of the National Child Labor Committee, although Georgia has a child labor law, it is a dead letter on account of the failure of the legislature to provide for a factory inspector. At present the Commissioner of Commerce and Labor of Georgia is charged with the enforcement of the child labor law, in addition to his many other duties, and he is provided with only two office assistants. The bill to provide for an assistant factory inspector to enforce the child labor law was favorably reported by both house and senate committees at the last session of the legislature, but no action was taken. Dr. J. A. McKelway, secretary for the Southern States of the National Child Labor Committee, cites this as proof of the need for a federal child labor law which could be enforced by federal inspectors.

EARLY DIAGNOSIS OF INTUSSUSCEPTION

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BUFFALO

An intussusception, though of rare occurrence, is one of the most dangerous surgical conditions of infancy. If the obstruction is recognized early the intestine may quickly be released by operative treatment.

My object is to review clearly the early symptoms which occur when there is still time to save a patient too young to localize or to describe his sufferings.

To diagnose intussusception during the second or third day is usually easy, but this delay is fatal.

Why does intussusception occur in babies? The conditions favorable to the invagination are a long mesentery and active, irregular peristalsis. The circular muscular fibers of the small intestine contract, and an upper segment of ileum is driven through the narrowed lumen. Sometimes the beginning invagination is released spontaneously. Peristalsis is increased by the obstacle and several inches of intestine are pushed into a lower segment; with the intestine the mesentery is also dragged in, aggravating the obstruction and nipping the intestine. The obstruction usually occurs in the lower ileum and the mass of bowel is pushed through the ileocecal valve and drags the cecum and colon with it.

As the intussusception is attached to the mesentery, the tumor moves in the arc of a circle and may be rotated to any region of the abdomen.

The effect of this accident is:

1. To produce agonizing pain; the crying of the baby often indicates the exact moment of the obstruction.

2. To arrest the fecal current and stop digestion and to cause vomiting.

3. At the site of the obstruction acute swelling and congestion occur, forming a tumor, hindering the release of the invaginated intestine and causing bleeding and a discharge of bloody mucus through the colon.

Thus we have the four principal symptoms: pain, vomiting, an abdominal tumor, and discharge of blood and mucus from the rectum.

PAIN

Nearly always the baby is breast-fed and of good disposition and digestion. Suddenly, without apparent cause, the child cries bitterly. Illustration: A fat, nursing baby of 6 months suddenly awoke at 6 a. m., and cried most piteously. This was the exact moment the telescoping commenced. The patient always cries, sometimes continuously, sometimes intermittently. The child's face is pinched and suffering, pale, cyanotic. A dangerous condition of shock is evident at a glance. The physician is most successful who listens to the mother's story of the baby's unusual sufferings and takes alarm quickly. After a few hours the symptoms of shock may disappear and the pain cease for a few hours. This amelioration is due to an edema of the intestines, and is also seen in strangulated hernia. Beware of this deceptive lull. A fatal condition is progressing and most mistakes in diagnosis occur because the physician arrives when the baby is a little better.

VOMITING

Associated with the initial pain is vomiting due to shock, arrest of the intestinal current and regurgita-

tion of duodenal fluid. The vomiting may occur every hour or two, may cease for a while and return. It is aggravated by food and laxatives so often given. Vomiting is rarely absent in acute intussusception. During the whole period of obstruction the baby refuses food and eventually rejects what it swallows. Fecal vomiting is infrequent. Although vomiting is an every-day occurrence with bottle babies, it must be emphasized that the intussusception patient is usually breast-fed, with a healthy digestion.

ABDOMINAL TUMOR

The abdominal tumor of intussusception is a mass of telescoped ileum, cecum, colon and mesentery. It may be found in any quarter of the abdomen rotating on an axis of mesentery. The tumor is insensitive; feels like a walnut or a potato; may be localized at one time and later disappear under the liver or in the pelvis. The abdomen is generally soft and may be thoroughly palpated. Often the tumor is undiscovered and the physician's diagnosis must be made from other symptoms.

Protrusion of the bowel through the anus is a late symptom indicating the telescoping of long areas of intestine. It may simulate a prolapsed rectum. The rectal mucosa, however, is easily replaced; a mass of intestine is not.

A digital examination of the rectum should be made in every suspicious case.

Sometimes no information is gained; sometimes a hemorrhage follows; sometimes the soft fleshy mass of incarcerated intestine is felt high in the rectum. A bimanual examination may discover a mass of telescoped bowel.

Early, at times, when the child is not crying, the abdomen is soft and relaxed. Later there may be distention. Peritonitis is a rare, late development. Often the irritation of the obstruction causes an effusion of peritoneal fluid.

Adhesion of the bowel wall is unusual; I have never seen it. The chief obstacle to reduction is swelling. The surface of the intestine is often purple from congestion and the bruised appendix in a condition leading to inflammation. After the obstruction is relieved a persistent diarrhea may show the damage the intestinal mucosa has suffered. Some children have a fairly good heart action for a day or two. Fever is not a symptom of intussusception, yet many cases have a rise in temperature after a few hours, probably from intestinal toxemia.

COURSE OF DISEASE

If the telescoped bowel is not released within twenty-four or thirty-six hours the baby will surely die of pain, vomiting, exhaustion, shock and toxemia from poisons exuded by the injured intestine. Death takes place in from two to seven days. Spontaneous sloughing of the intussusception has been reported. I saw one case, but the child died suddenly a year afterward, probably of intestinal stenosis.

The physician, in dealing with a supposed intussusception in a baby, faces dangerous possibilities. To wait may be to lose the child's life. To advise and force a dangerous operation in case of a mistaken diagnosis is a disgrace.

Several times I have anxiously watched a baby who was vomiting and in pain and have seen the symptoms spontaneously cease.

When a suspicious case is seen it should be closely watched. Much mischief is caused by giving food and laxatives. To give opiates for pain is to mask the symptoms until it is too late to act. An experienced clinician will quickly realize he is dealing with a serious atypical case, not one of infantile indigestion and colic.

BLOODY MUCUS STOOLS

The jamming of the intestine produces swelling, congestion and irritation. As a result blood and mucus exude from the lower end of the obstruction and flow from the anus, either as a hemorrhage or as bloody mucus dysentery.

A bloody mucus stool suddenly passed from a healthy baby is almost pathognomonic of intussusception and was absent in but one of my sixteen cases. The patient may pass one or two small fecal stools, the contents of the lower bowel; afterward nothing but blood and mucus.

The intestinal hemorrhage may occur early; first a gush of bright red blood and then bloody mucus, possibly after a digital examination or taking a rectal temperature. The finger or thermometer is withdrawn covered with blood, and bleeding follows.

Occasionally the intestinal hemorrhage is observed after the first day, too late for an early diagnosis.

When the incarcerated intestine has been pushed deep in the lower bowel there may be rectal tenesmus and bloody mucus stools which simulate dysentery.

When intestinal obstruction is complete the constipation is absolute and no gas passes the anus. The question should be asked: Has the child passed gas since it was taken ill? An intussusception may be excluded if large amounts of gas have been discharged, but small amounts of gas may leak through the nipped bowel. Twice in my experience the mother observed the passage of gas although a subsequent operation showed a dangerous intussusception.

One should always suspect an intussusception when a healthy breast-fed baby suddenly cries, vomits, passes bloody mucus stools and shows symptoms of shock. The surmise becomes almost a certainty if the thermometer or examining finger is covered with blood.

A roentgenogram of the intestines after an injection with bismuth is strongly advised. Three times I have seen the symptom-complex of intussusception confirmed by this method. All three patients were operated on and recovered.

A surgical consultation should at once be called and the responsibility shifted to the surgeon.

As to the operation, much depends on the surgeon's skill and speed. A minimum amount of anesthetic should be carefully given. The operator should not eviscerate the child to find the obstruction. The incarcerated intestine should be pushed, not pulled out; the appendix should not be unnecessarily removed. The proportion of operative cures of intussusception steadily increases.

A successful, experienced surgeon has several times said to me that if a case of intussusception was seen early operation was easy, and the credit of saving the life belonged to the physician who could at once recognize an atypical case.

ILLUSTRATIVE CASES

CASE 1.—Ileocecal intussusception with early diagnosis. James, an artificially fed 11 months' boy weighing about 17 pounds, had easy digestion with no food vomiting, though his weight had been stationary for a month. At a night feeding—10 p. m.—a slight increase was made in the food. At midnight the baby commenced to vomit and cry and con-

tinued to vomit frequently until the next noon. The last vomited fluid was yellow, a regurgitation from the duodenum. With the vomiting the baby suffered from pain, crying paroxysmally and seeming in utter misery. The baby passed a fecal stool at 6 a. m. and the mother thought that the child passed gas during the night.

A rectal injection given during the morning was almost instantly expelled. No food or laxatives were given from the onset of vomiting.

Seen at 1 p. m., thirteen hours after the vomiting had commenced, the child was crying from abdominal pain. Temperature 100.5; heart sounds strong. No abdominal mass was felt on palpation. After the withdrawal of the thermometer from the rectum there came a gush of fluid blood and mucus. Nothing was felt on digital examination. Nothing was elicited by bimanual examination.

The condition suggested an intussusception: A baby in good condition was, without adequate cause, attacked with severe abdominal pain with vomiting and the discharge of blood from the rectum. From 1 to 5 p. m. the vomiting ceased and the baby seemed easy, without pain. There were five small fluid, bloody stools. The improvement during the afternoon did not dispel the idea of intestinal obstruction, as bitter experience has taught me that in a case of intussusception, after a fierce onset of pain and vomiting, a lull in the patient's misery may occur from edema of the intestinal mucosa.

The surgeon agreed with me that the case was one of intussusception and a roentgenoscopy was done; but little bismuth could be injected into the rectum and the picture showed the obstruction to be in the left lower quadrant. The operation showed the mass of invaginated intestine in this region, but neither the surgeon nor I could feel any abdominal tumor.

Operation by Dr. Marshall Clinton, twenty hours after beginning of illness, showed a large amount of serous effusion from peritoneal irritation. The invaginated intestine lay about the sigmoid flexure; about 20 inches of ileum had been pushed through the ileocecal valve and the cecum, ascending and transverse colon had been jammed into the left lower abdominal quadrant. The serous surface of bowel and appendix were much congested. The ileum was slowly pushed out from the colon; there were no adhesions; the appendix was removed. Length of operation about twenty minutes. There was no vomiting. The baby was feverish and had frequent stools for a week. It was fed on breast-milk. Recovery was complete.

CASE 2.—Early diagnosis. Helen, aged 3 months, was partly nursed and partly fed.

November 6 at 3 a. m. the child took the bottle well and slept until 6 a. m., when it attempted to nurse and seemed ill, and cried as if in pain. She commenced to vomit and passed two stools. During the morning she cried a great deal, vomited five times in three hours and had six small stools of mucus and blood. Occasionally fluid blood flowed from the rectum. Examination was made two hours after symptoms began.

On palpation to left of navel a sausage-shaped mass 1½ inches long was felt; it was not tender. The abdomen was relaxed. On rectal examination, nothing was felt. Blood flowed from the rectum directly afterward.

Four hours after the onset of symptoms a surgeon agreed with me that an intussusception existed. There were:

1. The sudden onset symptoms in a healthy child.
2. The occurrence of vomiting, pain, bloody stools, and presence of an abdominal mass.

A large rectal injection of warm water was given, after which there was relief for several hours from vomiting and pain.

A surgeon, Dr. Clinton, was called. He found the child easy and comfortable. The abdominal mass had disappeared, displaced by injection. Both the surgeon and I felt that an intussusception existed and that the temporary amelioration was a deceptive lull.

Roentgenoscopy at 4 p. m. showed intussusception in the right upper quadrant. Some bismuth passed, the obstruction showing closure of the lumen of the bowel was not complete.

Operation was performed at 7 p. m. No abdominal tumor was felt during the late afternoon. Blood leaked several times from the rectum. Four inches of the ileo-invagination were pushed out. Relief from the intestinal obstruction occurred with rapid improvement.

CASE 3.—Intussusception with late diagnosis, in a 6 months' old fat baby, breast-fed. May 22, at 6 a. m., the child, previously in perfect health, commenced to cry as if in pain (acute), and grew white as if in a faint. It was given an injection, also castor oil and a hot bath. It was quite ill during the day, would not nurse, and during the afternoon had several discharges of bright red blood from the rectum.

May 23: The child was quite collapsed; vomited through the day and had three or four stools of mucus.

May 24: Fifty-two hours after the onset, 10 a. m., the heart was rapid and feeble. Temperature 99. The child was depressed, had passed no gas or fecal matter since the beginning of its illness. Rectal examination was negative. A mass was felt in the lower quadrant of the abdomen by palpation.

At operation, about sixty hours after the onset of symptoms, a gangrenous appendix was removed. The duration of operation was fifteen minutes.

The mass felt in the left lower adbominal quadrant was a mass of invaginated bowel. The ileum had penetrated into the cecum for 6 inches; the ascending colon was pushed to the left of the umbilicus; the lower ileum and colon were intensely congested; the ileum was easily pushed or pulled out of the ascending colon; the appendix was strangulated and gangrenous.

The child was in good condition after the operation but died in two hours.

CASE 4.—Intussusception, diagnosed as a case of dysentery. A girl, aged 5½ months, breast-fed, was well until July 19, when it seemed in pain and passed a number of stools of pure blood. It was sent as ill with dysentery to the Fresh Air Mission Hospital.

July 20 and 21: Occasional vomiting occurred of a yellow fluid. Frequent stools of mucus and bright red blood were passed, but no fecal matter. There was a suggestion of a tumor in the left and lower quadrant.

July 22: Temperature 102. The child was in great pain, crying for a day at a time. There was no suggestion of collapse. The abdomen was not distended. There were numerous stools of mucus and blood. A tumor was felt in the left lower quadrant. The child vomited fecal matter during an irrigation. The introduction of the tube into the rectum was very difficult. Rectal examination showed the intestine occluded about 2½ inches from the anus, by a mass of intestine. The finger in the rectum pushed back the intestine out of reach.

Operation at Children's Hospital about eighty hours after the beginning of symptoms.

An abdominal incision 3 inches long was made between the navel and pubis. Some serous fluid escaped. There were no adhesions. A large mass of intestines was crowded into the region of the sigmoid flexure. The entire colon was slightly congested. The ileum was invaginated through the ileocecal valve. The small intestine, easily pulled out, occupied the interim of the cecum, ascending, transverse and descending colon.

On the surface of the ileum, 9 inches from the ileocecal valve, was a depression like a dimple, on the surface opposite to the attachment of the mesentery, perhaps the beginning of intussusception.

The surface of the intestine was brownish here, not gangrenous.

The child collapsed at the close of operation. Two hours after the operation its temperature was 106.5, pulse 240. Death soon followed.

CLINICAL AND ELECTROCARDIOGRAPHIC STUDIES ON THE ACTION OF DIGITALIS *

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It is extraordinary that, after continuous use for 130 years, the study of the action of digitalis retains so vital an interest, not only in clinical medicine, but also in experimental pharmacology. This interest has been quickened by the fundamental investigations of James Mackenzie on the mechanism of the heart beat and by the construction by Einthoven of a galvanometer suitable for registering the action currents of the heart.

I mention James Mackenzie especially, because in the bewildering variety of studies which he has stimulated he has, almost alone, kept in view the essential objects of investigation in the domain of cardiovascular disease. These are, first, the study of symptoms suggesting the presence of incipient heart disease, and second, the study of the mechanism of heart failure and its treatment. His study of the disturbed rhythms of the heart was undertaken to ascertain whether they had a vital relation to these subjects, and to learn whether an appreciation of their significance would aid in understanding altered function.

I doubt very much whether the disordered rhythms of the heart, taken by themselves, presented a subject of fundamental interest to Mackenzie, and in that, too, he has differed from his followers. The reader remembers, no doubt, that he called his book "Diseases of the Heart"; but its theme may be said to be the arrhythmias in their relation to heart failure. This view of the arrhythmias gives them a new significance in studying the action of drugs. They can be made to serve as important indicators in estimating the value of therapeutic effects. Mackenzie's work, therefore, provides an important reason for reexamining the action of digitalis. Just as it was important to recognize the arrhythmias and to appreciate their significance, it was necessary to have far more accurate and more satisfactory methods of registering the motions of the heart than arterial and venous tracings, which record only the motions of the vessel walls, and in many instances record them badly or not at all. The string galvanometer, although it is not a substitute for them, has come to replace the older methods by one eminently practical, free from error due to the personal equation and reliable within the limits of its capacity. This instrument has made Mackenzie's work more easily available. Its use, as I hope to show, has made possible the introduction of added criteria for recognizing the action of drugs. Mackenzie's new conceptions and Einthoven's new instrument, reported almost simultaneously, made therapeutic investigation from a new point of view desirable.

I want to discuss the effects of digitalis on heart rate, on conduction, on the electrocardiogram, on blood pressure and on diuresis. But because there is still a very distinct divergence of opinion between practitioners of clinical medicine and pharmacologists, as to how digitalis acts, I must take account of the views of both in presenting the subject. But the matter is not simple, for clinicians differ in the results of their observations, and pharmacologists on the interpretation of experiments.

The school of Schmiedeberg still maintains that the main action of a digitalis body is on heart muscle; the school of Gottlieb, while it does not deny to digitalis bodies a cardiac action, still maintains the view that it has an important action on the walls of the arteries. Both schools find that the drug increases the excursion of the heart in contraction, both believe that it elevates blood pressure, both believe that it increases the amount of renal secretion.

It is perhaps not an overstatement to say that in a general way clinicians have been too much influenced by these experimental results and have felt obliged to find that the administration of the drug in patients results in parallel phenomena. It requires a very small experience in treating patients suffering from heart disease to find oneself disappointed because the expected results did not occur. And when discrepancies were noticed, the discovery was not often followed by an effort to explain them. The subject was often dismissed by finding fault with the potency of the drug or by discovering an idiosyncrasy in the patient. But even if drugs were always potent and there were no individual idiosyncrasies, it is extremely likely that patients would continue to react in different manners to the drug. And the reason for that must be that individuals, although they suffer from what in a general sense is called heart disease, yet present a great variety of clinical pictures.

If the cardinal symptoms of heart failure alone are considered, rapid pulse, disturbed rhythm, high blood pressure, dyspnea, pain and edema, it becomes clear that patients do not usually present all of these signs at once, that some present one or two of them, or a group. It must be apparent that the pharmacologic experiment does not take this diversity of circumstances into consideration; the experiment is done under artificial conditions, and the doses which are employed bear no relation to those permitted in clinical medicine. There can be no question of the usefulness to therapeutics of these experiments; as guides, they are indispensable, but it must be clear that they neither replace nor parallel the clinical conditions we must treat. That there has consequently been a divergence between the results of pharmacologists and clinicians in a practical sense was inevitable. The responsibility for it is probably shared equally by both. Pharmacologists have dealt usually with simple normal conditions; clinicians with complex pathologic ones.

In therapeutics, divergent accounts of the action of the digitalis bodies are also found. For instance, they are sometimes said to reduce the heart rate, and to act almost as specifics; others deny such an action. In the presence of fever their use is discouraged by some as valueless. In the domain of valvular defects a variety of indications and contradictions for giving the drug prevails; some regard these as unimportant. Until recently, some avoided it in cases of high systolic arterial pressure, because it was reputed to elevate this to dangerous limits. Some, again, have detected a striking effect in a short time (Marvin), while others have recently reported that it has no effect on pressure at all. Its effect on diuresis has, on the whole, been commonly held and has been gained on account of the disappearance of edema, when this sign of heart failure is present.

* From the Hospital of the Rockefeller Institute for Medical Research.
* Read before the Section on General Medicine, College of Physicians, Philadelphia, Dec. 14, 1914.

A drug having apparently such very powerful actions as digitalis must be extremely valuable and must gain in usefulness if its modes of action are carefully studied and precisely recorded. It has been no easy task to reconcile the divergent views drawn from experimental experience, and equally difficult to understand the contradictions expressed by reliable clinicians. We have therefore been engaged in the Hospital of the Rockefeller Institute in the attempt to understand and to reconcile these differences, in order to make more available the data of experimental pharmacology, and to ascertain whether the indications for the use of digitalis could be simplified if patients were grouped with a view of delimiting the conditions in which uniform results might be expected. For these purposes it has been deemed wise to study digitalis in the human subject, because in the first place it is about its action in patients that information is wanted, because, in the second, that information can, in practically all respects, under present conditions be satisfactorily obtained, and because, in the third place, the study can be made not only without any prejudice to the patient, but, indeed to his advantage.

It is apparent, if the cardinal symptoms of heart disease during heart failure are considered, rapid pulse, disturbed rhythm, high blood pressure, dyspnea, pain and edema, that not all patients present all of these complaints, and that each patient suffers from only a selection of them; of these symptoms the most obvious

CLASSIFICATION OF PATIENTS

A. Normal rhythm	a. Without edema.	1. With normal blood pressure 2. With high blood pressure
	b. With edema	3. With normal blood pressure 4. With high blood pressure
B. Auricular fibrillation	a. Without edema	5. With normal blood pressure 6. With high blood pressure
	b. With edema	7. With normal blood pressure. 8. With high blood pressure

basis for the arrangement of patients into groups for the purposes of treatment, especially at the present time, is rhythm. Rhythm, it will be remembered, was the subject with which Mackenzie started. The basis has, in point of fact, been found extremely serviceable, for in a general way it has been said that the drug acts on cases of auricular fibrillation very successfully, and has even been called, erroneously of course, a specific; while in cases presenting a sinus rhythm it has been said to fail. We have therefore divided patients primarily into fibrillators and nonfibrillators. On the question of rhythm, pulse rate also depends, and we regard these two factors together, but not, of course, as the same. The second basis on which patients can be divided is the question of edema and the retention of water, involving the question of salt metabolism, and these two symptoms may also be regarded as phases of a similar disturbance. The third basis on which we have found it useful to study patients has been on the basis of the height of blood pressure. We do not, of course, pretend that a classification such as this presents all the points of view from which either heart failure or the treatment of heart failure can be viewed; it omits important symptoms such as dyspnea and pain. Often these are cardinal, often they are secondary signs. But, after much consideration, we have adopted it as a useful working plan for testing the effect of drugs. The classification then, is as in the accompanying tabulation.

The group of patients which presents the simplest form of disease is the first one, in which the rhythm of the heart is normal, there is no edema and the blood pressure is not elevated. This is the state found in a patient who, if he presents himself for treatment at all, is in an early stage. It is naturally understood that an early stage of heart failure does not by any means suppose an early stage in heart disease. It is, on the whole, the simplest kind of heart failure which one is called on to treat. The general physiology of such a patient presents the nearest approach to the normal. It is the effect of giving digitalis to him to which we have confined our attention and with which this report principally deals. It is clear that often he requires no drugs; if digitalis is given him it is important to determine what effects are to be expected, and also how the expected effects are to be recognized. This is the method of experimental pharmacology, and the results obtained in this way can be most nearly compared with experimental conclusions. They can be made also to serve as a basis for considering the effects on the more complicated groups.

I have mentioned earlier the topics I mean to discuss, but it is well to dwell for a moment at this point on another. Aside from changes in the physical signs which some clinicians believe themselves capable of appreciating, we have no means whatever of estimating alterations in the functional efficiency of the heart, referable *to the heart itself*. If it were possible, an accurate estimation of contractile force would be the most important single measure to take, but for this we have no satisfactory criteria. Observations on blood flow, blood pressure, estimations of volume output, electrocardiography, have all been equally disappointing. Those effects reported earlier, of changes in the magnitude of ventricular contractions gained in experiments, are more recently admitted (Joseph) to have been obtained by doses far too great. The much smaller doses now used are still much larger than are permitted in therapeutics, but even these fail to show marked changes in the extent of the excursion of the ventricular wall which were formerly held to indicate the nature of effective digitalization. The methods employed in pharmacology are not superior to those now available in clinical medicine. Both are on a par in respect to obtaining objective records of this phase of digitalis action. We must believe, therefore, that if digitalis increases the ability of the ventricles to pump blood, it does so by means of a change which is more subtle than can be distinguished by our methods.

The most important alteration we look for traditionally is in the pulse, or better, the heart rate. This is the first subject we have investigated. For the present we omit fibrillators from consideration. The reduction in the rate of the heart is an effect of digitalis on which we have been taught to rely, both by pharmacologists and clinicians. It is, unfortunately, an effect which we have not found constant in the type of case we are considering. We know also that it fails to reduce rate in the tachycardias of a paroxysmal nature, in those of exophthalmic goiter, and in those of fever. That the pharmacologist could report such an effect depended, no doubt, on the size of his dose. That the clinician believed it to occur depended until recently on his not distinguishing between fibrillators and nonfibrillators. The brilliant reduction in rate was found in the former. It was also found in the sinus rhythm when edema was present; but neither group of patients is at present under discussion. In

the absence of edema, a reduction in rate may be said to occur principally in the hypodynamic and unstable heart, in the heart which for unknown reasons undergoes spontaneous alterations in rate. In hearts of this nature, a natural tendency to reduction is accentuated by administering digitalis. Aside from these, the majority of individuals do not respond to therapeutic doses of digitalis by a fall in heart rate. When amounts equal to 0.4 gm. of leaves a day are given for five to seven days, ventricular slowing does occur, but it occurs as the result of the blocking of the auricular impulses. The latter continue at an unreduced speed and do, as a matter of fact, usually exceed their initial rate. In view of the continued initial, or, in most cases, accelerated auricular rate, it is doubtful whether one may speak of a digitalis slowing of the heart as a primary phenomenon. It depends obviously on the disturbance of a function other than that of stimulus production. We have been led to conclude from our observations, therefore, that digitalis slows the sinus rhythm only in the group of hypodynamic hearts, and that to produce slowing is not a primary function of digitalis in therapeutic doses.

Mention has been made of the blocking of auricular impulses after a sufficiency of digitalis has been given. It is a phase of its action to which Mackenzie drew attention clinically and von Tabora in experiments. Mackenzie, and more especially Lewis, believed it to be produced only when the conducting fibers between auricles and ventricles were previously damaged, more especially by rheumatic inflammation, as evidenced by the fact that the auriculoventricular interval was unduly lengthened. We have been able to show that an action on conduction can invariably be observed in patients, varying from simple lengthening to block. An effect on conduction may therefore be set down as a usual effect of giving the drug, apart from specific preexisting injury. An evidence of delayed conduction can be observed very early after the administration of the drug has been started. We have noticed it within forty-eight hours. In many instances, the auriculoventricular interval gradually lengthened during the succeeding three to five days until partial heart block occurred. We have believed it possible to maintain conduction time at any length we have thought suitable, by controlling electrocardiographically the amounts of digitalis requisite to produce the effect desired. Not all cases, however, show the gradual lengthening in conduction which I have described; block then occurs with extreme abruptness within a few hours. After the administration of digitalis has been terminated, alterations in conduction usually continue about two days. In the exceptional case, it may persist for two weeks. If gastro-intestinal symptoms have occurred, they do not persist beyond two or three days.

The occurrence of delayed conduction has been dwelt on for the purpose of showing that in certain cases, probably in a large number, the fact that digitalis is acting on the heart can be ascertained early in the administration. When the sign is obtained, it is definite. The problem which arises for decision is whether or not it is a sign which indicates a beneficial action on the heart. For a definite answer on the basis of this sign alone, more experience is required. A greater degree of digitalization can be obtained; but we may learn that on obtaining this effect, the maximum which is desirable has been reached.

When full doses of digitalis have been given, sufficient to cause delayed conduction, abnormal heart rhythms are commonly seen. They have been much described and occur as exaggerations of the normal sinus arrhythmia, extrasystoles, partial heart block, and rarely auricular fibrillation. We shall omit further mention of these. One arrhythmia which is still practically unknown as the result of giving digitalis may be described here. In this form none of the auricular beats is blocked; auricles and ventricles both continue to beat and do so almost at the same rate (Fig. 1). But there is incomplete coordination between them, so that a fixed relation ceases to exist. They

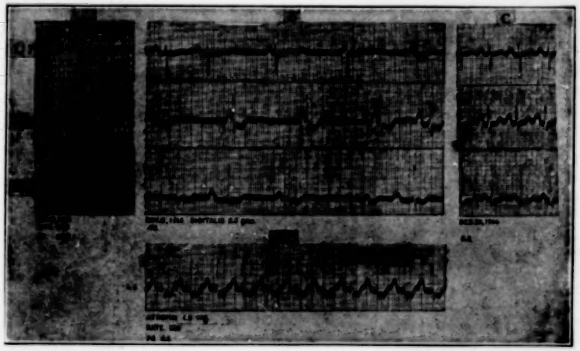

Fig. 1.—Divisions of the ordinates equal 0.1 millivolt; divisions of the abscissae equal 0.04 second. *A*, before digitalis was given; three leads (Einthoven) are shown. *B*, after 2.5 gm. of digitalis had been given; inversion of the *T* wave is shown in Leads *2* and *3*; the curves in Leads *1* and *2* show a type of nodal rhythm described in the text. *B 1* was taken a few minutes after *B*; atropin, 1.0 mg. was injected; it shows that the rhythm of the heart returned to normal; the inverted *T* wave persisted; Lead *3* is shown. *C* shows the three leads; the curves were taken when digitalis had been completely eliminated and the curve had returned to the outline of the control, *A*.

must, however, be closely related. The conclusion cannot be escaped that they have an origin in common, or two related origins. If it is a common origin, the lack of exact coordination must depend on a shifting of the site of stimulus production, similar to one we have described in the ventricles, possibly complicated by changes in conduction; if it depends on two competing stimulus-producing foci, they must be actuated by a common factor. It is a matter of interest that we have found arrhythmias of this form associated only with various forms of intoxicants, notably digitalis. Robinson and Auer have seen it also in the presence of anaphylactic shock.

Aside from the lengthening in auriculoventricular conduction which, as has been said, begins in many cases soon after digitalis treatment is initiated and can be taken as an indication that an effect on the heart is being obtained, even though no change in rate has occurred, another new sign in the electrocardio-

gram appears to be one of great importance. This sign is an alteration in the size, shape, and direction in the T wave (Fig. 2, A and B). If digitalis is given to a patient whose electrocardiogram contains a T wave pointing in the usual upward direction, the first change noticed is usually a diminution of the height of this wave, usually in the third lead first, and later in the second. The first lead may also show changes, but relatively speaking, less frequently. The change may be noticed as early as twenty-four hours to consist in a diminution in the height of the wave, but at the end of forty-eight hours this change is more distinct and the wave may by this time have become iso-electric. At this time or, more often, later, it becomes inverted. Instead of becoming iso-electric or inverted, it may become diphasic, and in a number of cases of this sort it is easy to distinguish T waves consisting of two parts, a first portion which becomes inverted and then returns quickly to a second portion which represents the end of the original wave. The diagram (Fig. 2 A) explains this relation. The dotted line represents the altered portion of the curve. There are, of course, many electrocardiograms in which, for pathologic reasons, the T wave is originally pointed in a downward direction. If digitalis is given to such patients, the direction of the T wave is altered, and during the taken place. It is clear that the influence on the muscle may outlast the presence of the drug, but it is difficult to believe that an action of such prolonged duration (three weeks), after giving the drug has ceased, can depend on a simple matter of concentration.

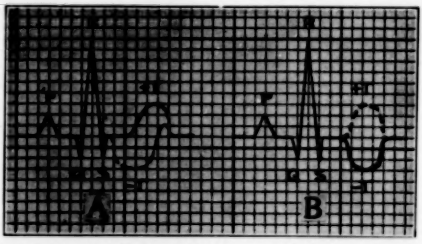

Fig. 2.—*A*. The solid line represents the normal outline of the electrocardiogram. The T wave is directed upward. The dotted line shows the change which occurs in the T wave under the influence of digitalis. *B*, in a similar way, shows the change in certain cases when the T wave is initially directed downward. Under the influence of digitalis it turns upward.

Two criteria have, then, been shown in electrocardiograms to indicate surely the fact that digitalis is acting on the heart: the first in the slight but definite lengthening in conduction, the second the very curious certain of the change, we have repeated the observation a number of times in the same individual, and to be certain, also, that it is not dependent on a pathologic heart, we have shown it to exist in persons whose hearts are quite normal. It is a sign, then, that the heart is digitalized, and it is a sign which appears early. It appears at a time when no change in conduction need have occurred. It appears in the absence of any alteration in rate. The factors on which the change in the T wave depend, we cannot explain precisely at the present time. That it is an evidence of an alteration in the contractile substance of the heart is an inference which is naturally drawn from the circumstance that at the present time the electrocardiogram is generally regarded as the expression of changes in the electric state of the muscle. Whether, in a clinical sense, the change in the T wave is to be taken as an indication of beneficial or not beneficial action, it is impossible to say, though there seems little reason to question the fact that it is.

Many matters for consideration arise in relation to the sign. It is a matter of discussion just now, for instance, whether the effect of digitalis on heart muscle depends on an intimate combination of the drug with the muscle (Speicherung) in which digitalis is destroyed or consumed, or whether it acts merely by virtue of its concentration in the circulating fluid. In the latter case, the signs of its effect disappear promptly with the withdrawal of the drug, with the diminution in its concentration. The drug is not consumed and, if the solution is recovered, may be used with equal efficiency in a succeeding heart. The essential point of difference is as to whether or not the drug is actually consumed when it is given. In both cases it must, of course, be excreted. If the drug acts merely by virtue of its concentration, a rapid excretion may be expected, and its composition may, of course, be altered; it need not necessarily reappear as the original substance. In the case of its being consumed, its composition on excretion would naturally be altered, but one would expect the rate of its excretion to be much delayed.

In view of what has been said of the change in the T wave, under the influence of digitalis, and more especially of the dependence of the change on alteration in the heart muscle, it is difficult to escape the conclusion that a degree of great intimacy in the combination between the drug and the muscle must have action of the drug may be directed upward (Fig. 2 B). An especially beautiful example of this variety we have found in a case of complete heart block. Usually the negative T wave becomes deeper, especially in the third lead. That the change is due to digitalis is proved by the fact that when the drug is stopped, the T wave returns to its original size and shape. The length of time required for it to return to its initial condition varies between five and twenty-two days. To be and very constant alteration in the T wave. Even if no slowing whatever of the heart occurs, we may be certain, by virtue of finding one or both these phenomena in electrocardiograms, that definite digitalis action on the heart has taken place. Rate, the criterion for which we looked and on which we relied, fails us, but in its place we have these other and surer ones. If these statements prove to be correct, they necessitate an alteration in the indications for the use of digitalis. It is not a drug, at least in the cases we are considering, which alters the rate of the heart—it is a drug which, by virtue of its combination with heart muscle, has a bearing on contraction, an effect which is evidenced by its effect on the T wave. It appears, then, that the groups of cases in which the drug was supposed to be of value have decreased in number, that is to say, those in which an effect on rate was expected, while groups in which new indications for the use of the drug may be found in the light of muscular and conduction effects we may hope will increase. In consequence, many patients with heart disease from whom digitalis has been withheld may,

with new criteria, be drawn into groups for whom it is indicated.

In contrast with the action of digitalis in nonfebrile patients, it is worth referring to the well-known and often mentioned failure of the action of digitalis in cases of fever. Its general failure has been dwelt on by Mackenzie, whose opinions have recently suggested an investigation of the problem to Gunn in Cushny's laboratory. Its failure in pneumonia, in particular, has been dwelt on by G. A. Gibson of Edinburgh. Similar views in regard to the reputed impotence of the drug are no doubt held in this country. Elsewhere, as in Krehl's clinic, it is usually given and thought to be beneficial. It is not exactly clear what is meant by a failure of digitalis to act in the presence of fever. As an antiphlogistic it need not be considered. What is usually wanted in fever is an agent either to slow the pulse or to increase its strength. It is no doubt a general experience that digitalis does not slow the pulse in fever, and its failure to do so is the complaint most often made. That failure in this respect is not unexpected is clear from our experience in nonfebrile cases. Whether it strengthens the pulse or, in other words, increases the force of ventricular contractions, is an effect which has also been much discussed. Satisfactory objective measures of this are not available, but there is much clinical, that is to say, subjective evidence on the part of observers favoring the idea that it exists. In the absence of evidence bearing on contraction, electrocardiographic evidence can be supplied to show that digitalis has an action during fever of a nature precisely similar to that already described in nonfebrile patients. This evidence consists, as in the nonfebrile, in its influence on the auriculoventricular interval and on the *T* wave. Here, as in the nonfebrile cases, the changes begin within from twenty-four to thirty-six hours and persist for days after defervescence and after the giving of the drug has been stopped. Whatever its nature, it is clear that the same sort of support can be given the heart by digitalis during fever as in its absence. That this is the sort of support that the heart demands may be open to question. It is an error, therefore, to regard its action as a failure until its efficiency from actual, rather than from incorrect points of view, shall have been examined. Possibly as an aid to contraction, much may be gained from its use; but the expectation of obtaining an action on heart rate must be abandoned.

There is, however, a group of febrile cases in which digitalis acts efficiently on rate. In our experience these have not been patients exhibiting the normal sinus rhythm, but patients showing auricular fibrillation or auricular flutter. These rhythms appear spontaneously during attacks of fever and disappear spontaneously afterward. Occasionally the ventricular rate in such cases is inordinately high, the high rate itself being a predisposing factor toward heart failure. The most desirable thing to accomplish in these instances is a reduction in rate. By the use of intravenous doses of strophanthin, one might expect to block the greater number of auricular impulses which cause the acceleration of the pulse and to reduce the ventricular rate to reasonable limits. In several patients in whom the abnormal rhythms were found, strophanthin was injected and has acted in the described way. Under these circumstances this method of treatment has seemed to us a life-saving remedy. It may be mentioned that, except for its greater speed in action, strophanthin is not necessary and that exactly similar results in cases of flutter have been obtained by the use of digitalis by mouth. The effect on rate which digitalis has on auricular fibrillation and flutter, when these occur in fever, is precisely the same as in the nonfebrile state, and the results obtained are precisely the same. We are led to believe, therefore, although we have reached no definite conclusion, that there is no difference in principle between the way digitalis acts in fever and in nonfebrile conditions. One might venture the suggestion that, from the point of view of heart rate, and from the point of view of an emergency, the possession, in certain cases, of a heart beating after the manner of auricular fibrillation or flutter may, in fever, be a valuable asset, for it is in these rhythms that digitalis, by blocking auricular impulses, is able to slow the pulse rate. It may be mentioned, incidentally, that fever patients having auricular fibrillation initially are not necessarily prejudiced in the outcome of the disease by the abnormal rhythm.

Another topic long a subject of conflict is the relation of digitalis action to blood pressure. Clinicians have often withheld the drug from patients having high pressure in the fear of producing unpleasant consequences, as, for instance, cerebral apoplexy. One of the most recent contributions to this phase of the action of digitalis has been Marvin's. His investigations with a single dose of the tincture in normal medical students led him to conclude that, after five hours, an elevation of from 10 to 15 mm. Hg occurred in systolic pressure, and that the effect of this persisted for fifty hours, when the curve resumed its initial height. Many exact studies have been made in recent years, notably by Mackenzie, Price, and Lawrence. These and other investigators have failed, on the whole, to find pressure changes resulting from the administration of the drug. The form of this statement demands a certain modification. The clinical reports bear the defects mentioned earlier—that they are based on cases indiscriminately selected, or not grouped at all. They include cases with high pressure and cases with low. The heart mechanism, in itself an important factor, is, especially in the German reports, not considered. The estimation and interpretation of pressures in auricular fibrillation, as will be shown in another place, present problems much more intricate than those in the sinus rhythm, and the results of investigations indicate a different response to digitalis.

In the group of patients under consideration, those with sinus rhythm, without edema, and with a moderate or low systolic pressure, we have seen no substantial alteration in the level of either the systolic or the diastolic curve. Our conclusions are like those of other more recent observers. The few opportunities we have taken to verify the observations made by Marvin have failed in establishing results similar to his. In the cases we have studied, then, no alteration in pressure was found. In so far as the older fears are concerned, it is apparent that digitalis must be considered a safe drug to use.

Vascular effects, however, aside from changes in pressure, may be produced, and the untoward or beneficial nature of these requires consideration. A specific vascular action, not dependent on heart action or on pressure effects, has been advanced and held by the school of Gottlieb. Gottlieb, while admitting a cardiac action of digitalis, nevertheless maintains that the peripheral action of the drug is the one by virtue of

which its prime effects are produced. More recently clinicians, employing optical methods of registration devised by Frank, have again taken up these aspects of digitalis action, and reports are now being published of alterations in reaction of the blood vessels, notably in the tension of the vessel walls, when they are under the action of the drug. It is the results of these investigations, far from satisfying as yet, which demand further study in order to establish the assurance that the vessels of the body, and more especially of the brain and meninges, do not become subject to injury as the result of giving digitalis.

The last phase of the action of digitalis which I wish to discuss is the relation of the drug to the excretion of urine. The foxglove obtained its initial reputation because diuresis was so enormously increased when it was administered. For almost a hundred years it was supposed that this was the one and most striking of its effects; but now the situation in regard to this phase of the problem is less simple. The questions now being discussed relate first to when digitalis does, and when it does not, increase the amount of urine, and, second, when it does, by virtue of what mechanism this result is brought about. The first problem, whether or not the amount of urine is increased, is a clinical problem and can be definitely solved. In the patients in the group under consideration, it may be stated definitely that no increase in diuresis takes place. It is, of course, remembered that these patients have no edema. The problem as it relates to patients having edema is naturally different, and involves other factors; but in the simplest form of case, no increase in the amount of urine takes place. So far, digitalis cannot be considered a specific diuretic. In experiments the situation is different, because there, although obviously edema is likewise absent, it is almost universally maintained that increased urinary flow takes place. But the clinical and the experimental conditions are not quite parallel, because in the latter, doses which have usually been employed are much larger than normal, that is to say, from three to fifty and more times the lethal dose for man; and because the method is an acute method, for the drug is given intravenously, or under the skin, and the effect is observed under the conditions of surgical operation. But, although the clinical and experimental conditions present results so divergent, it may be interesting to enumerate the theories which are given in explanation of the occurrences observed in experiments, the more in that they discuss factors which must be considered in the diuresis which occurs when digitalis is given in edema. As may have been supposed, three possible explanations have been urged, first that the experimental diuresis depends on a local vascular action in the renal vessels; second, that it depends on the general elevation in vascular blood pressure, and third, that it depends on the increased force of the heart's action. It will be noticed that none of these explanations refers to an action on renal epithelium. But this phase of the discussion of digitalis action scarcely bears on the problem now being considered, and may consequently be dismissed.

We return to considering the effect of digitalis in patients of our group. Diuresis, as has been said, does not occur in any stage of the treatment. When the cardiac effects are clearly discerned, as in the auriculoventricular interval and in the state of the T wave, no alteration in output is found. Intake is, of course, maintained level. But later, when dissociation occurs, and gastro-intestinal symptoms have taken place, the output actually diminishes. On account of loss of appetite, and, in some cases, of nausea and vomiting, the fluid intake naturally falls and accounts satisfactorily for urinary decrease. In view of these considerations, the conclusion is justified that a specific effect on urinary output does not occur as the result of giving digitalis to the class of patients under discussion. This, in itself, is not a significant contribution to an understanding of the pharmacology of the drug, but in another place it will be shown that it has an important bearing on the drug's action in edema.

No consideration of the action of digitalis on the various functions of the heart, on rate, on conduction, on contraction, and on circulation, is complete without a reference to the nature of this action. For many years a war of words, the two most prominent of which were "myogenic" and "neurogenic," was fought. This fight was waged on the question of the conduction of impulses in the heart. The battle became a drawn battle; no decision could be reached. Anatomic studies showed that both nerve and muscle elements were inextricably associated in the heart in general, and in the special muscular systems as well. The effort to distinguish the functions of one tissue from those of another became impossible, and the struggle was abandoned.

The same words, "neurogenic" and "myogenic," have in a similar way formed centers around which another battle has been fought, the battle to elucidate the mechanism of the action of digitalis. Fortunately, these battles have been less violent, and the lesser violence was probably due to the fact that it was always more than half suspected that neither one side nor the other was altogether wrong, and, in fact, that both sides were partially right. Our studies, it seems to us, indicate that this is so. So far as atropin may be taken to be a drug acting especially on the ends of the vagi, a release of the heart from a phase of digitalis action by its use indicates a nerve action of digitalis (Fig. 1 B). So far as digitalis has other effects, which atropin does not release, it may be inferred that it has an action directed more especially to muscle. Both effects can be observed at the same time, as we have seen, and by virtue of them another struggle, one may hope, has been terminated.

Our studies have, then, led us to draw a number of definite conclusions in regard to the way digitalis acts, and to find new criteria in the T wave and in the effect on conduction for detecting when the drug is acting. It seems important to emphasize the fact that it is essential to distinguish differences which patients suffering from heart disease present, and to study them in groups, with these differences in mind. Rhythm certainly offers a prime basis. The effect of digitalis on rate and on a number of other capacities varies with the nature of the disturbed function. In the use of the drug in pneumonia we have found it to have an action essentially similar to that found in the nonfebrile. In the absence of edema, we have not observed a diuretic effect. Evidence has been found which indicates persistence of action, longer than can be accounted for if the drug acts only by virtue of its concentration. We have shown that digitalis has a twofold action on the heart, nervous and muscular. We believe that clearness of indications will result only if the exact mechanism of the action of the drug is ascertained; for only when these are clearly met, can rational treatment be instituted.

NEW METHODS OF PYLOROPLASTY FOR CONGENITAL PYLORIC STENOSIS *

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In recent years, the operation of posterior gastro-enterostomy for congenital pyloric stenosis has become more and more popular. This is largely due to the remarkable results of H. M. Richter of Chicago and Charles L. Scudder of Boston. The former reports twenty-two cases, with only three deaths, which surpasses anything thus far recorded in literature. While it is true that Richter and a few other surgeons who have made a special study of the technic of this operation on infants have achieved wonders with posterior gastro-enterostomy, many of our most eminent and skilful surgeons can claim no such results. All surgeons, even including those who recorded the most brilliant results, will admit that this operation is too much of a surgical procedure for the emaciated and moribund infants who have been brought too late to the surgeon, from failure of early diagnoses, or too long a period of medical treatment. It was an experience with exactly this type of cases that led us into a detailed study of this condition, and in turn caused us to devise the new operative procedure to be described later.

CASE 1.—Of two cases which came in February, 1915, to Dr. Abt at the Michael Reese-Sarah Morris Hospital for Children from out of the city, one was an extremely emaciated moribund infant, 11 weeks old, who was treated for an acute gastritis before admission. The child started to vomit at 2 weeks, and continued for nine weeks, up to the time when seen by Dr. Abt. There was also a history of constipation. On examination, a tremendously distended upper abdomen, with the characteristic peristaltic gastric

Fig. 1.—Tumor with pyloric ridge (*A*).

waves, was noticed, and a tumor was felt on palpation. In spite of the moribund state of the child, it was decided to operate, as it seemed the only chance the child had for recovery. A posterior gastro-enterostomy was performed, with all the precautions as to shock and technic as detailed by H. M. Richter, Scudder, and Downes of New York. The tumor at the pylorus was olive-shaped, about the size of the terminal phalanx of the thumb. On its anterior upper quadrant was a peculiar ridge of muscle extending from the midportion of the tumor to its duodenal end, and which had an appearance similar to a tuberosity on a bone. The tumor was white, anemic in appearance, hard to the touch, and of the consistency of cartilage. We also noticed that exposing the stomach produced not nearly the shock that handling of the small intestine produced. The latter action caused the child to become pulseless, and to stop breathing. When the small intestine was returned into the abdomen, and the operation stopped for a time, the pulse reappeared, and the breathing became regular again. When the small bowel was handled again, the child again went into a complete collapse. The duration of the operation was twenty-five minutes. The patient did well for ten days, when it started to vomit. This continued for thirty-six hours, when the patient collapsed and died.

Fig. 2.—Tumor with pyloric ridge (*A*).

CASE 2.—The second case was that of a child, 8 weeks old, who had vomited for six and a half weeks, who was also in a moribund condition. Posterior gastro-enterostomy was performed. The stomach was extremely dilated. The pylorus had the typical tumorlike enlargement, with the usual ridges on its upper anterior quadrant. The child went into collapse, and died six hours after the operation. Duration of the operation was twenty-two minutes.

Necropsies.—The necropsies showed that the stomach in both cases appeared to be more the normal size than at the time of the operation. Both stomachs were put through the water test, and both gastro-enterostomies appeared watertight. In the stomach of the first case a 14 F. catheter could be passed through the pylorus, but none in the second case. Both cases had the typical tumor, with its ridge, as described above (Figs. 1 and 2). On cross section (Fig. 3, the pylorus revealed the enormous hypertrophy of the circular muscles, and in some areas also a hypertrophy of the longitudinal muscle, especially where the ridgelike processes appeared (Fig. 3A). The intermuscular connective tissue bundles (Fig. 4) were also enlarged, and seemed to be involved in the process. This coincides with the findings of Dr. Abt, in 1900, and Lewis and Grulee.[1] The mucous membrane was thrown into longitudinal folds (Fig. 5), and was redundant. It was infolded and compressed by the surrounding hypertrophied muscular tissue.

We believe that these congenital pyloric stenosis cases can be divided into two classes:

1. A. Large tumors with almost complete compression of mucous membrane and complete obstruction.

B. Small amount of hypertrophy of muscularis, but with almost complete compression of the mucous membrane, and complete obstruction.

2. A. Large tumors, with only partial compression of the mucous membrane, and only partial obstruction.

* From the Michael Reese Sarah Morris Hospital for Children, and the Morris Institute of Medical Research of the Michael Reese Hospital.

1. Lewis, Dean, and Grulee, C. G.: The Pylorus After Gastro-Enterostomy for Congenital Pyloric Stenosis, THE JOURNAL A. M. A., Jan. 30, 1915, p. 410.

B. Small amount of hypertrophy of muscularis, with only partial compression and only partial obstruction.

We believe that many of the so-called pylorospasms which are treated medically with good results, but show recurrence of symptoms from time to time even into adult life, belong to the class of hypertrophy, with partial obstruction. Such cases have been recorded by Marie, Russell and Landerer, and some of these have later come to operation.

The new surgical procedures which we have devised are based, first, on the pathology described in the foregoing, and second, on the results from animal experiments.

Ramsteadt, who made a longitudinal incision through hypertrophied muscle, down to the mucosa, and Nicolls, who made a V-Y-shaped incision through the muscularis down to the mucosa, produced only a slight gaping of muscle and herniation of the mucosa at the site of the pylorus. Weber, who modified this slightly by suturing at right angles to the long axis, had not much success, since it was difficult to suture the hard, cartilage-like, hypertrophied muscle in the transverse direction and make it hold. It is evident from Figure 5 that the Ramsteadt, Nicolls and Weber operations produce a hernia on only one side of the pylorus. They do not reduce the infolded mucous membrane, and do not reduce the cartilage-like, hypertrophied musculature, so that the peristaltic waves can pass over the pylorus.

I have demonstrated[2] how easily the mucous membrane can be shelled out by everting the muscularis. Since publishing the report of this work, I have performed fifty-six pyloric closures, with gastroenterostomy by this method. By fluoroscoping these animals, we found by separating the mucosa from the muscularis that we would get a paresis of the pylorus, which would last from two to twelve weeks. On the other hand, in a series of animal experiments, a report of which will appear in print later on, in which we resected one half of the circumference, and one half of the length of the pylorus and pyloric antrum, we reconstructed the resected half by two superimposed free fascial transplants. No paresis occurred. To the contrary, this reconstructed pylorus, with its one-half normal intact mucous membrane and muscularis, and its other half of fascial transplants, showed on fluoroscopic examination a perfectly normally functioning pylorus. When the mucous membrane is separated from the muscle, we separate Meisner's from Auerbach's plexus, which probably accounts for the paresis of the pylorus. This is the first essential step in the pyloroplasty. By cutting down to the mucosa and shelling it out, we reduce the folds of the infolded mucous membrane (Fig. 5), and produce a paresis of the spastic pylorus. The second part is to reconstruct the hypertrophied musculature to its normal thickness. This can be performed by either cutting away the inner circular layer, or utilizing it as a plastic flap, as will be shown in the following steps in four cases operated on by this method.

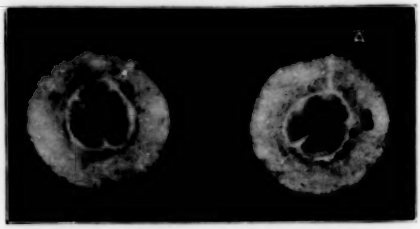

Fig. 3.—Cross section of pylorus; *A*, muscular ridge; *B*, circular hypertrophied muscle; *C*, the infolded membrane.

1. TYPE A.

Case 3.—A baby, aged 3½ weeks, was admitted to Dr. Abt's clinic at the Michael Reese-Sarah Morris Hospital for Children, with all the typical signs and symptoms of a pyloric stenosis. Operation of a pyloroplasty was performed, as follows: An incision, 1 inch above the umbilicus, along the right rectus, and 1 inch in length, was made through the skin. This was retracted, and a slight curved incision (Fig. 6) was made through the anterior sheath of the rectus. This was carried through the abdominal wall to the peritoneum, and the peritoneum opened. A fine gauze sponge was placed immediately into the abdomen to prevent evisceration. A fine catheter was now passed by mouth into the stomach to allow the collapse of the enormously distended stomach. A small retractor was placed in the right side of the incision, and slow traction was made. With the index finger hooked into the lesser curvature near the pylorus, I was able to deliver the hypertrophied pylorus into the wound without bringing any other portion of the stomach or bowels into the wound. The pylorus was now grasped between the thumb and index finger (Fig. 7) and a longitudinal incision was made over the upper anterior quadrant of the pyloric tumor, and slightly beyond each end of it, down to the mucosa. If one should hesitate to use the sharp scalpel here, for fear of injuring the mucosa, he could make a superficial incision into the tumor and divide the deeper portions

Fig. 4.—*B*, intermuscular connective tissue bundles; *C*, hypertrophied muscle.

2. Strauss, A. A.: Two New Methods of Closure of the Pylorus for Pyloric and Duodenal Ulcer, The Journal A. M. A., Oct. 21, 1914, p. 1525.

to the mucosa, with the handle of the scalpel. The hypertrophied musculature cannot be everted so easily as described in pyloric closure, but one side of the musculature can be grasped with fine gauze by the assistant, while the operator makes pressure with the thumb and index finger from below. Then a Kocher dissector, with the aid of the scalpel, was used to free the mucosa from each side of the divided muscularis until it was almost completely shelled out. The mucosa separates very easily; in fact, much easier than it does on the normal pylorus, either human or animal.

The muscularis was now everted as much as possible, and a very fine scalpel (Fig. 8) was used to divide the muscle tumor longitudinally into two layers of equal thickness, a deep and a superficial, and the incision thus made was carried lateralward by a specially constructed angle knife almost to the edge of the divided muscle tumor. This newly made flap was everted (Fig. 9). The opposite side was then treated in the same way. The everted edges were closed with No. 00 fine waxed silk interrupted sutures (Fig. 10). A small piece of free transplant from the great omentum was sutured with four interrupted waxed silk sutures over the pylorus to cover the raw surfaces (Fig. 10, inset).

We now had a reconstructed pylorus, with about the normal thickness of muscle, and plenty of room for the unfolded mucosa. The entire operation did not take over ten minutes, and seemed to be devoid of shock. The abdomen was closed with a slight imbrication of the walls, as one would use in an inguinal hernia. Interrupted chromic catgut was used. Two tension sutures of heavy waxed silk also were used. I believe the imbrication will prevent hernia and evisceration. The patient was now turned over to Dr. Abt for the after-care. He made an uneventful recovery, was given water a few hours after the operation, and mother's milk in twelve hours. He quickly gained in weight. There was no vomiting, no gastric peristalic waves were to be seen, and the patient had normal bowel movements. The patient was fluoroscoped and roentgenographed at the end of twelve weeks. The pyloric function was normal, and the emptying time of the stomach was normal. The patient is now far beyond his normal weight for a baby of that age.

Fig. 5.—Photomicrograph; *A*, hypertrophied muscle; *C*, infolded membrane.

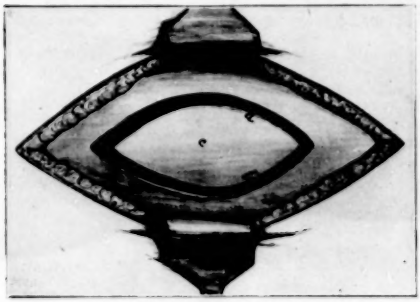

Fig. 6.—Incisions: *a*, first incision; *b*, second incision; *c*, sheath of rectus (anterior).

CASE 4.—With my colleagues, Dr. George L. Davenport and Dr. Julius Hess, I saw a second case with all of the characteristic symptoms and signs of pyloric stenosis. I persuaded Dr. Davenport to try the above-described method. He very cheerfully permitted me to direct the steps of the operation. Local anesthesia was employed. The operation was performed by him with perfect ease in ten minutes. The patient was turned over to Dr. Julius Hess for the after-treatment, made an uneventful recovery, and is gaining weight rapidly. No gastric peristaltic waves could be seen following the operation.

CASES 5 and 6.—In a third and fourth case which came to Dr. Abt, operation was performed in the same way, and the patients were turned over to Dr. Abt for the after-treatment. Both have made uneventful recoveries.

1. TYPE B.

When the hypertrophy is very marked, we shell out the membrane, but instead of making a plastic flap of the tumor we remove the larger portion of the inner circular muscle. This procedure we have performed thus far only experimentally on dogs.

SECOND METHOD

When there is a small hypertrophy of the muscle tissue with almost complete compression of the mucous membrane, we make a second curved incision (Fig. 6 *b*) through the anterior sheaths of the rectus,

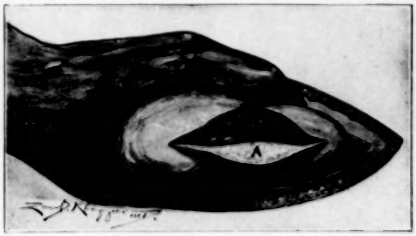

Fig. 7.—*A*, muscle tumor; *B*, the mucosa.

and remove the oval flap with some of its muscle. After freeing the mucous membrane of the pylorus, we insert this free fascial transplant, as in Figure 11, which is covered with a free transplant from the great omentum with four interrupted fine silk sutures. This method has been performed on ten dogs, which were

later fluoroscoped and roentgenographed, and killed at the end of six months. The pylorus was functionating normally, and the transplant organized without any

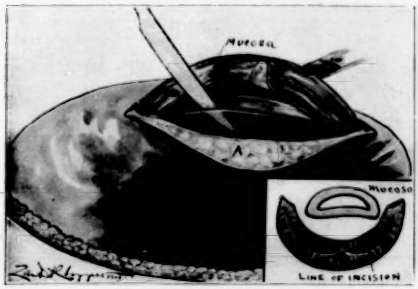

Fig. 8.—*A*, muscle tumor; *B*, internal layer of muscle; inset, transverse section.

cicatrization (Fig. 12). There seems to be a slight compensatory dilatation of the stomach wall opposite the transplants.

ETIOLOGY

As regards the etiology of this condition, there are two views: first, that it is a congenital hypertrophy which later produces the spasm; and, second, that it is a physiologic hypertrophy, produced by the hypermotility and spasm of the musculature of the stomach. In order to answer this question, Dr. Abt and I are conducting some animal experiments at the Morris Institute for Medical Research of the Michael Reese Hospital. The basis on which we are working is as follows: If this condition is a physiologic hypertrophy produced by hypermotility and spasm, we ought to be able to reproduce it by producing spasm and hypermotility, and if this physiologic effect does not produce a hypertrophic tumor, such as we find in congenital stenosis, it would speak highly for the congenital origin of this condition. To prove this, the following experiments were performed:

Several groups or series of young dogs, from 6 to 10 days old, were used. The pylorus was exposed and the mucosa shelled out for half of its circumference. A fine free fascial transplant was sutured to the partially shelled out mucosa and sutured so as to produce the infolding, such as is seen in Figure 5. This infolding produced an obstruction which would barely allow a fine probe to pass through. In other words, we tried to reproduce the pathologic condition as found in congenital pyloric stenosis. The animal vomited, and had hypermotility and spasm, but no tumor developed.

On a second series of animals the foregoing experiment was performed, plus the cutting of the splanchnic nerves.

On a third series now being done the same experiment is being reproduced, plus stimulating the vagus nerves. This part of the experiment is accomplished by placing two fine insulated sterile wires around the vagus nerve and allowing them to come through the wound. In this way we are able to stimulate these nerves and produce a hypermotility as often as we care to do so.

On a fourth series of animals, after the stomach was opened, a foreign body was placed into the pylorus of sufficient size so it could not pass through but would allow a small amount of food to go through the pylorus. This foreign body was so sutured that it could not be regurgitated back into the stomach.

All of the experiments just mentioned are in addition to some others which will be described in detail in a later paper. They all produced hypermotility, vomiting and some spasm, but no hypertrophy of the pyloric muscles, such as is seen in congenital pyloric stenosis.

These experiments certainly speak highly for the congenital origin of this condition. Coutley, who found a pyloric stenosis in a 7-month premature infant, also speaks highly for this view.

Those authors who set forth the argument that, if it was congenital, the symptoms should start at birth, and not two or three weeks after birth, can be answered in the following hypothesis: The new-born infant for two or three days after birth gets but a few drops of colostrum, and a very small amount of milk. That the amount of milk in the first two or three weeks only gradually increases, we also know. We believe that like all other internal organs, and like other physiologic functions in the body, the stomach does not reach its full physiologic limit, especially as to motility, until that time. That is to say, the newly born infant has a very small amount of muscular activity, but this physiologic action is gradually developed and does not reach its full limit until two or three weeks after birth.

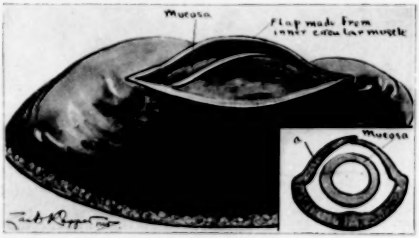

Fig. 9.—Muscular flaps turned out; inset, transverse section: *a*, muscularis.

We are now carrying out some fluoroscopic examinations of newly born infants to prove this point. In a child born with a congenital hypertrophy, if such is the case, the slight opening left in the pylorus is sufficient to allow the undeveloped peristaltic waves of the first few weeks to force the food through, but the constant high tension to which the musculature of the

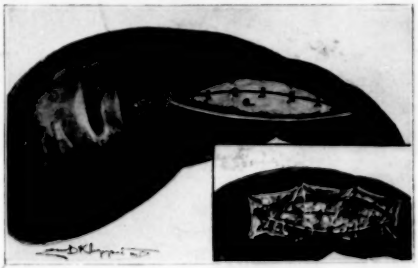

Fig. 10.—The newly made muscle flap sutured; inset, *a*, free transplant of great omentum covering field of operation.

stomach is forced finally throws it into a spasm which helps to close the pylorus, and produces all the subsequent characteristic symptoms.

We believe that one of the greatest arguments against the physiologic origin of this hypertrophy is that in a physiologic hypertrophy that portion of the stomach which undergoes the greatest muscular activity would show the greatest amount of hypertrophy. It is well known, from a mechanical standpoint, that there is less muscular motion immediately in the region of the pyloric ring where this tumor occurs than there is in the antrum of the pylorus, where the muscular movement of the peristaltic waves is greatest. If this is true, the tumor should appear in the antrum rather than at the place where it is found. It is also very hard to conceive that this tumor should not have a gradual ending on the antrum and on the duodenal side, if it is due to the physiologic hypermotility and spasm, whereas, as a matter of fact, it ends abruptly. It is also contrary to any knowledge we have of conditions in other parts of the body, and the rate of tissue growth, that such a tremendous amount of hypertrophy should be produced as we have seen in infants who were operated on at the end of one week after birth.

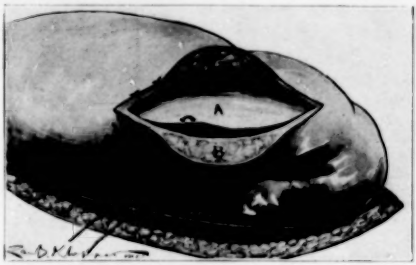

Fig. 11.—*A*, fascial transplant from anterior sheath of rectus; *B*, muscle tumor.

CONCLUSIONS

The advantages of the above-described methods of pyloroplasty over posterior gastro-enterostomy are:

1. The incision required is very small, in contradistinction to that necessary in performing posterior gastro-enterostomy—large enough to deliver the partially distended stomach, transverse colon, and then to find the right loop of jejunum.

2. Those who have performed gastro-enterostomies in these infants will appreciate the saving of a tremendous amount of shock thus secured.

3. The methods of operative procedure described cover every form of pathologic condition so far found in congenital pyloric stenosis.

4. The operations reconstruct a pathologic pylorus to a more normal pylorus, particularly as to its lumen and enormous thickness of musculature.

Finally, the normal anatomic relation of the stomach to bowel is preserved by the pylorus remaining the normal connecting tube between stomach and duodenum. The developing liver and pancreas in the infant, which we know from experiments in physiology are stimulated reflexly by food passing through the duodenum, must certainly be considered in a more normal condition here than with a closed-off pylorus, as occurs after a posterior gastro-enterostomy.

Moreover, the duration of the operation is one-third the time taken by posterior gastro-enterostomy.

The most important fact regarding this operative procedure is that these children come back from the operating room with no more shock than from the smallest minor operation. The projectile vomiting has ceased, no peristaltic waves are seen, they take their nourishment, and do not appear ill at all, as one would expect from an abdominal operation.

30 North Michigan Ave.

Fig. 12.—*A*, fascial transplant; *B*, union of transplants with muscular tissue; *C*, mucous membrane.

A Unique Work for Tuberculous Children.—The annual report of the North American Children's Sanitarium for 1914-1915 gives a history of the movement started in 1901 for the relief of poor children in Philadelphia during the hot months of summer. Since then this movement has been supported almost entirely by what has become a seasonal feature of Philadelphia life known as "porch parties." After a few years a seaside sanatorium for the treatment of tuberculous children was founded and much good has been done. The active and consulting staff of the sanatorium includes a large number of the more prominent surgeons and physicians of Philadelphia and Atlantic City, where the sanatorium is located. Prior to 1914, the sanatorium was supported wholly in the manner stated above with the assistance of the newspaper which founded it. In 1914, owing to the war, the income of the sanatorium fell off to such an extent that it was felt that it would have to be partially closed down, but an appeal made to the public by the newspaper, supplemented by the surgeons who compose the executive staff, resulted in very gratifying contributions which enabled the managers to keep the hospital open to its full capacity of thirty-six beds and even to increase it to forty-five. Substantial and commodious buildings completely equipped for treating particularly surgical tuberculous affections in children are owned by the sanatorium management. Since the sanatorium opened in 1910, 150 children suffering with tuberculosis of the bones and joints have been admitted. Of these, 114 have been discharged and thirty-six still remain.

OXYCEPHALIC EXOPHTHALMOS

WITH TRAUMATIC RUPTURE OF BOTH EYES *

RALPH A. FENTON, A.B., M.D.
PORTLAND, ORE.

Tower skull is so generally associated with mental deterioration that such patients are rarely studied by the ophthalmologist, but drag out a miserable institutional existence. The case herewith reported presents an unusual combination of unaffected mentality with the most excessive deformity and the severest ocular complications.

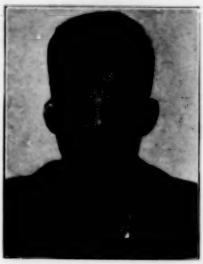

Fig. 1.—Front view, before rupture of left eye, after lid repair, December, 1914.

Fig. 2.—Side view, same time as in Figure 1.

A. L., white man, aged 47, parentage American for several generations, has had four brothers and four sisters; all relatives are long-lived, strong, healthy and of large frame. This man stands 6 feet 2 inches, and if his shambling, bowed posture were straightened he would be 2 or 3 inches taller. His hands are large and knotty from manual labor, his feet very large, splayed outward and flat. He has a characteristic "pituitary" slouch forward of the neck between the shoulders, and his gait and posture in walking are gorilla-like. He is unmarried, but considers his sexual powers normal; the sexual organs are of normal size and development.

His vision was somewhat defective in childhood, so that he did not go to school much; and his peculiar head and ugly face aroused cruel comment and made him rather shy and retiring. He was brought up on a farm, and since maturity has done various sorts of heavy work in lumber camps and in land clearing. When 39 his right eye was torn open and blinded by a flying fragment of a broken claw hammer. His general health has always been excellent, save for an attack of measles at 40, from which he was in bed for four days, and after which his sight failed somewhat. Previous to that time he had always been able to read newspapers in comfort, but within a few months his vision was reduced to the large headlines.

The remaining (left) eye seemed to protrude more and more after this attack of measles, and he had several severe corneal ulcers, which healed with much scarring and visual loss. The increasing exophthalmos, probably now due to the postfebrile softening of the sclerocorneal coat, and consequent lengthening of the globe, pushed the lower lid down more and more, and finally everted it altogether.

For this complete ectropion he came to us in November, 1914. The Ziegler cautery puncture was extensively made at one sitting under cocain, with rather pronounced reaction; the eye was kept open and filled with petrolatum, and after four weeks the scarring had restored the lid margin into contact with the globe. At this time refraction was attempted, and it was found that vision had improved with correction of the lagophthalmos from 2/200 to 5/200; — 7.00 sph. ⌒ — 3.00 cyl. ax. 180 degrees gave 12/200, but this was not prescribed at that time; he was cautioned to wear protecting goggles but neglected to obtain these.

January 10 he was brought in with the lids enormously swollen, conjunctiva chemotic and anterior chamber full of blood. The eye had been struck by a flying branch, rupturing the sclera subconjunctivally, just back of the limbus and in front of the internus insertion. Vision, light perception. He was put to bed, with iced compresses and atropin; a slow iritis was gradually controlled, and he went home in four weeks with about the same vision as before the accident. There is a slight increase in the photophobia which had annoyed him ever since his attack of measles.

Fig. 3.—Side view, after rupture had healed, February, 1915.

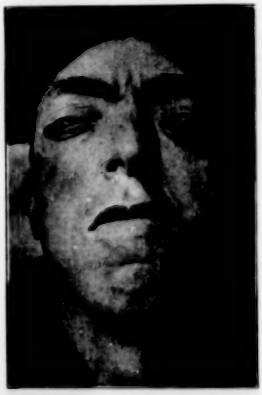

Fig. 4.—Front view, same time as in Figure 3.

Fig. 5.—Three-quarters view, same time as in Figures 3 and 4; the left eye in this view projects as far as the nose.

* Read before the Section on Ophthalmology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

The present condition, then, as shown in Figures 1, 2, 3, 4 and 5, is a total exophthalmos of both eyes, the globes lying outside the anterior margins of the orbit. The right eye is flattened, shrunken, small cornea, vision nil. Left eye, buphthalmos, conical cornea with transverse leukomas; conjunctiva thick and grayish, lids thickened and drooping, but not

Fig. 6.—Lateral roentgenogram.

everted; pupil large, irregular, transversely oval, and disappearing behind the nasal limbus at the site of the recent scleral rupture; at this point lies an extruded patch of uveal pigment. There is divergent strabismus of about 10 degrees; all rotations are limited and difficult; he moves the head instead of the eye. The upper lid is held down voluntarily in the ptosis position to shade the pupil. Vision has come up to 10/100 and photophobia and conjunctivitis are much lessened since March, under —4.00 cyl. ax. 60 degrees, medium smoke tint, constantly worn.

There is moderate septal deviation without obstruction, and no nasal discharge is present. The palatal arch is characteristically high, and the teeth in both jaws incline forward, occlude badly, and are much decayed.

The ears are large, but very thin, approaching the Morel type. Partial ossification of the lobular and meatal cartilages has taken place on both sides. Hearing is normal.

In Figures 6 and 7 we note especially the pointed vertex; the triangular form of the enormous skull; the grooves of the frontoparietal convolutions on the inner surfaces of those bones; the apparently normal sella impinging by a thin wall on large sphenoidal sinuses; the lowering and shoving forward of the orbital roof from a horizontal position to an angle of 45 degrees; the large open frontal sinuses, and the almost simian degree of prognathism.

With all this deformity we should expect mental deficiency, occasional motor pareses, or jacksonian attacks; but such things have never occurred. This man is heavily muscled and surefooted, a thorough and capable workingman within his visual limitations, well-informed beyond his opportunities, very fond of good music, kind and neighborly but very shrewd.

Generalization on a single case is fraught with fallacy; yet may it not justify us in revising a little the gloomy prognosis of clouded mind and useless life that attends the birth of such a child? The eye deformity suggests obvious measures of protection, and more than the usual caution should follow up the acute infectious diseases. Nor need we always assume the presence of hypophysial cysts or tumors. This man's large frame is common to all his family. Probably pressure has somewhat modified the activities of his chromaffin system, but he presents none of the dystrophy of the adiposogenital type and none of the cerebral hebetude which authorities lead us to expect.

I would ask the section's opinion whether early double subtemporal decompression might not save such cases from this gruesome catalog of complications. This would be worth the risks incurred, even if it could not, as here, save the alert mind of this unfortunate man from its lifelong incarceration behind so hideous a mask.

801 Stevens Building.

ABSTRACT OF DISCUSSION

DR. HAROLD GIFFORD, Omaha: The photographs of this case give a fine representation of what Virchow called *Spitzkopf*. For some reason this term has been almost altogether displaced in Germany by *Thurmschädel*, our English equivalent being peaked or tower skull. A Greek term like oxycephaly is preferable to these expressions from the vernacular, which often call up an entirely erroneous picture, since it can be used entirely without prejudice as to its real meaning. The fact is there is a great deal of confusion as to the type of skull indicated by these terms.

Fig. 7.—Frontal roentgenogram.

In Germany *Thurmschädel* is generally used to designate a skull which is flattened in front but which runs well out to the rear with a prominence at the site of the superior fontanel; this type being the result of the too early closing of the coronal suture. The typical *Spitzkopf*, such as is shown in the case of Dr. Fenton, is probably caused by the premature closure both of the coronal and the lambdoidal sutures with resultant flattening both in front and behind. Whether the narrowing of the optic canal

which was first observed in these cases by von Michel, is due to the pressing downward and forward of the superior orbital plate or whether the atrophy of the optic nerve is first caused by intracranial pressure, and the narrow optic canal is simply a lack of development corresponding to the small size of the nerve, is a matter of dispute. Following the idea that the displacement of the orbital plate is the main cause of the atrophy, Schloffer has opened the cranium, raised the frontal lobe and chiseled off the superior wall of the optic canal. In the two cases in which he has performed this operation, the visual results have been practically zero; and this is really what we should expect since the injury to the sight in these cases is nearly always produced in early childhood or infancy, and has generally reached the stationary point by the time that most of them are brought to the oculist for treatment. I believe that by keeping in mind the possibility of premature closure of the sutures as the cause of poor sight in infants and children, we might, by early decompression operations, do some good in many cases which hitherto have been allowed to go without treatment until it was too late. Luckily such exophthalmos with resultant corneal ulceration as is shown in Dr. Fenton's cases is very rare, as is the occurrence of ectropion; in fact the only other case of ectropion that I know from oxycephalic exophthalmos is one reported a few years ago by my colleague Dr. Patton. The excellent mental development which Dr. Fenton notes as remarkable in such an idiotic looking individual has been noted by other authors; in fact, but one in twenty of these unfortunate oxycephalics shows marked mental deficiency. This undoubtedly means, as Virchow pointed out, that peculiarities in the shape of the skull have much less influence on the development of the brain than is commonly supposed. An otherwise healthy brain adapts itself to the new conditions and finds room for its growth in other directions, while the poorly developed brain of the microcephalic idiot is the cause, not the result, of its peculiarly shaped skull.

DR. EDWARD JACKSON, Denver: Since tower skull or oxycephaly began to attract attention in connection with visual disturbance, I have looked for these cases, but I have seen no case of disturbance of vision with very marked skull deformity. I think these cases must be distinctly rare outside of some parts of Europe. Records have been based on a number of oxycephalics in a blind asylum. Dr. Gifford has brought out that the disturbance of vision comes very early in life. The stage of optic neuritis which precedes the optic atrophy is always in early childhood. There are practically no records of such cases except when children were brought into the asylum for the blind very early. As has been pointed out, many cases have shown marked narrowing of the optic foramen. It seems to me much more probable that the essential deformity, the original deformity, is rather in the bones at the base of the skull than in the union of the sutures of the vault. The thickening of the bone leads to the narrowing of the foramen. Trephining has been done too late in life to hope for any good results. We have more to hope for in these cases in the direction of internal secretions than we have from operative interference early enough to be of any benefit.

DR. RALPH A. FENTON, Portland, Ore.: In regard to the protection of the eyes, this man found bandage pressure extremely painful. It was almost impossible to interfere with the upper lid of the eye in which he sees; so we have protected his eyes by keeping them filled with white vaselin. He does a good deal of work now out of doors where it is dusty. This man happens to be an exception to the general rule. His blindness is a result of ulcers instead of pressure on the optic nerves.

MALIGNANT TUMORS IN AND AROUND THE ORBIT

WITH REPORT OF STARVATION METHOD OF TREATMENT *

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Since the starvation treatment of malignant growths of the upper neck and face has undoubted value, ranging from prolongation of life to a cure, depending on the nature of the case, amount of involvement, age of the patient, character of the operation, etc., I have been led to say a word on the subject and report the twenty-two cases in which operation was performed during the past nine years, two of which were nonmalignant tumors of special interest in which ligation seemed necessary. These cases follow Nos. 1 and 2, in which the patients were not operated on.

Fig. 1 (Case 3).—Sarcoma of the roof of the mouth. Picture taken May 8, 1908, operation April 20, 1907. At that time tumor was as large as an egg, the nose was closed and the cheeks swollen.

Robert H. Dawbarn of New York must be credited with the employment of the idea of starvation for malignant growths in the parts described, inasmuch as he has pointed out the numerous anastomoses of the external carotid artery, and suggested excision after tying each branch of the artery in an attempt to destroy permanently all such connections. He has further shown how futile is any attempt at starvation when the external carotid of the other side is permitted to remain.

My own experience has been so consistently in line with his that it seems worthless to report, unless it may serve to call attention to cases looked on as hopeless, yet not entirely so, and thereby enlist workers here to give that aid which can be given in many cases in which the patients are frequently encouraged to refuse any and all surgical attention.

HISTORICAL

It might be well here to go briefly into the history of ligation for malignant tumors and beg you to keep in mind the difference between ligation and excision.

In regard to the external carotid from the tables of Madelung and Lipps, it was tied for a tumor of any sort about 1830—it was not applied for outspoken malignancy until about 1854, at which period Maison-

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neuve endeavored to give the method a fair test. He performed unilateral and bilateral ligature collectively seven or eight times, securing no benefit from the procedure. The growths were all cancers of the buccal cavity, tongue and pharynx. Then follows a case of Lannelongue in 1873.

The next record of ligation of external carotid for starvation purposes was by Dr. Joseph D. Bryant,[1] in 1887. Tuffier, a French surgeon, in 1897 reported three cases; all of these were ligation, none attended by favorable result.

Following this came the masterly essay by Dawbarn, winning the Gross prize in 1902, reporting eighty-three operations of various surgeons on forty-eight patients, over a period of eight years, all practicing his operation of ligation on both sides of each branch of the external carotid with excision, with a tabulated list of cancer twenty-four, sarcoma twenty, no definite report, two, angioma two.

In cases of cancer, life was prolonged for seemingly a short time; the tumors usually showing lack of activity for a few months. In the twenty sarcoma cases, the record was truly remarkable, especially when you understand that these cases were all hopelessly involved and rapidly approaching an end. Out of twenty cases—they being ward cases—only eleven could be traced; one of these was a tumor of the orbit, and the operation was supposed to be of no value, inasmuch as the blood supply is also derived from a branch of the internal carotid. Dawbarn had but two recurrences out of the remaining ten. Taking the three-year limit as a radical cure, he had four definite recoveries out of eight cases which survived the accidents of the first year, these being all far advanced and considered hopeless and ineradicable sarcomatous masses.

Fig. 2 (Case 5).—Sarcoma. Scar after removal of tumor, which displaced eye outward and upward.

Dawbarn's cases are grouped into three classes in which the excision of the external carotid may be performed:

1. "Those where excision of both external carotid, and to avoid deformity, leave an operable tumor in place, thereafter depending on a closely and regularly maintained observation of growth for a period of years."

2. "Cases where the growth is operable and consequently excised."

3. The third class would comprise those whose cancer is already ineradicable, involving, for example, the base of the tongue, the floor of the mouth, and pharyngeal wall; here nothing is done to the growth, but all lymph nodes are removed in the path of the operation for excision.

First, I shall report two cases typical of others, occurring when the starvation treatment of excision was not practiced.

CASE 1.—A sarcoma, involving the antrum on the left side, occurred eleven years ago in my practice. I have never forgotten this big, strong Norwegian, whose life was rapidly destroyed in spite of all that we did. The left side of his face became a tumor mass, sapping his life. The man died after an illness of only three months. The laboratory report showed small round-cell sarcoma. In this case ligation and excision were not practiced.

CASE 2.—Another patient was sent to me from Mangum, Okla., ten years ago, with a history of eight years before having sustained a kick from a horse, which broke the nose, changing its relative position, markedly deviating the septum, and blocking the fossa of the right side so that it was impossible for the patient to breathe through the passage when suffering with the slightest cold. Two weeks before coming to me he had developed what seemed to be a maxillary sinusitis with swelling of the right side of the face with more or less discharge from the right nostril. The pain had been so acute that a dentist had extracted all of his teeth, thinking that this would relieve him. His physician was called in and recognized what appeared to be a polypus in his nose and advised him to come to me. I found an immense polypus growing from the ethmoidal membrane, filling the cavity of the nose and extending into and filling the postnasal space. It appeared benign and was promptly removed.

Fig. 3 (Case 7).—Melanosarcoma.

A day or two later an Ash operation, as practiced at that time, was done on the septum. It was straightened, complete drainage established and a favorable prognosis given. It was not long before I found my mistake, for from all surfaces there rapidly appeared new growths; even in the vault of the pharynx nodular masses appeared. A section of tissue was sent to a pathologist for examination, and the whole mass thoroughly removed. Microscopic examination confirmed the belief that it was sarcoma, and was of the round-cell variety. The ethmoid cells commenced to break down, and the right eye protruded and was pushed to the right side. Pain became intense and it was necessary to establish drainage through the inner canthus to the ethmoidal cavity.

Believing the most radical operation of no service, I advised the patient to return home. He went home and the next day, to St. Louis, where he was operated on, dying in two or three days. Ligation and excision were not performed.

These two cases are typical of others in and around the orbit observed by me, in which the disease invariably made rapid progress and the patients died early,

1. Bryant, J. D.: Med. News, 1887.

regardless of the most complete removal of the tumor, wherever located.

I shall now briefly discuss eleven cases of sarcoma occurring in various parts of the face and neck, with nine cases of carcinoma, along with two other cases, one being adenoma of the tongue and submaxillary space, and the other, a teratoma of the soft palate. I shall not go into details, for much of the history would be tedious and necessarily of little scientific value. In all of these twenty-two cases, ligation and excision were practiced.

SARCOMA CASES

Case 3.—Mrs. D., aged 62, had a sarcoma of three years' growth, involving both antrums. When I first saw her, both of her cheeks were markedly swollen, and she was unable to breathe through her nose. Her mouth being open, a tumor about the size of an egg could plainly be seen, involving the roof of the mouth. The patient had lost in flesh and strength, and it seemed that she could not survive a week. April 20, 1907, the external carotid and branches were ligated and excised on the right side, and two weeks later on the left side. The patient rapidly improved and the tumor diminished sufficiently for her to breathe through the nose. The hemorrhages ceased. The gums receded. The egg-shaped tumor in the roof of the mouth subsided, and the pain, which had been excruciating, disappeared. May 8, 1908, she was seen and we were unable to find pulsation in any of the arteries which had been excised. Figure 1 was taken on that date. The patient went to the county poor farm, and we have a record of her death, three years after the operation, from pneumonia, having lived with her tumors in a fairly comfortable manner, being given opiates for whatever pain she had. There was a pathologic report of the section, but the sarcomas were not disturbed.

Case 4.—Mrs. D., aged 57, had a well-formed subperiosteal tumor lying over the superior maxillary and malar process near the antrum on the left side. There was history of a six months' growth, extremely painful on pressure; the patient said that there was constant pain, evidently due to pressure on the infra-orbital nerve. Oct. 18, 1907, ligation and excision of the carotid on the left side was done, with complete removal of the tumor, which was a large, spindle-cell fibrosarcoma. Two weeks later the opposite side was ligated and excised. After leaving for home the patient did not return for observation. She died eighteen months later, presumably from metastasis.

Case 5.—Mrs. M., aged 58, had a sarcoma involving the left antrum, extending into the orbit, and pressing the left eye far to the left. In December, 1907, ligation and excision were done on both sides, after which the tumor was removed and the eye replaced (Fig. 2). The patient regained strength, and the tumor area remained quiescent for about a year. This was followed by a slow ulcerating process involving the antrum and the orbital plate, causing the eye gradually to slough with some pain and no bleeding. The patient became addicted to morphin, which her family freely administered, and she died two years after the operation. There were no granulations. It looked as if lowered vitality due to morphinism intensified lack of vascularity to the parts, which slowly sloughed, and the patient died of the complications.

Case 6.—Mrs. C., aged 28, had a sarcoma growing from a perforated septum, closing both nares. It was further complicated by a seven months' pregnancy. One side was ligated and excised, Oct. 15, 1909. Two weeks later the opposite side was, and the tumor removed, the patient making an uneventful recovery. Five and one-half years later she was still living, having given birth to two children since the operation, and is now well.

Case 7.—Miss M., aged 20, had melanosarcoma of the orbit, complicated with hematoma, causing absorption of orbital fat and pushing the eyeball far out to the left. At this time, as the patient refused operation on the external carotids, the internal rectus muscle was divided and the eye was pulled further forward. A small tumor mass extending toward the optic foramen was removed without stretching the optic nerve unnecessarily. The orbital operation was facilitated by the absence of orbital fat, and the eye being pressed back into position, the muscle was stitched; drainage was then left for four days. The patient recovered binocular vision and seemed none the worse for her operation. This patient was operated on, Aug. 1, 1910 (Fig. 3). The pathologic report was a melanosarcoma.

Fig. 4 (Case 7).—Later picture showing return of growth.

Dec. 28, 1911, the patient returned (Fig. 4), accepting the ligation and excision operation, which was performed. The eye was pushed far out to the left with a tumor mass growing in the orbit. This tumor mass was all removed along with the eye; a circular incision was made near the margin of the palpebral fissure, and after the removal of contents of the orbit, the skin was pressed down into the orbit, covering most of it, allowing a small area of granulation to take place. The same method I have employed with excellent results, when one could leave the orbital fat, giving a smooth surface, as in Case 16, in which it had been removed on account of carcinoma of the conjunctiva. March 10, 1915, the physician reported Patient 7 well with a 22-months-old baby.

Case 8.—S., boy, aged 9, March 10, 1911, gave a history of having had a blow three years before over the inner canthus followed by swelling which lasted for days. In August, 1910, the swelling returned. A tumor involving the orbit, apparently originating in the ethmoidal cells, pressed the left eye outward. The tumor was fairly prominent and had been incised by an investigator for pus. I removed this tumor and cauterized the surface following the carotid operations on both sides. A year later there was a tendency to growth, but the eye was in good position and diplopia had not returned. The patient came to me, Jan. 1, 1914, nearly three years later, with a history of bleeding from the postnasal spaces, severe vomiting and headache. He was blind in the left eye, which protruded to the left side. He had lost his temporal field in the right eye, but retained his nasal field of vision.

Opthalmoscopically the left nerve was greatly inflamed, the eye being pushed well outward, with slight ability to rotate the ball. The right nerve showed the nasal side involved and apparently choked for 6 diopters with the temporal half of the nerve congested, but otherwise distinctly not involved, suggesting that the temporal half was sheathed, while the nasal half was bearing all the brunt of the tumor now involving the chiasm. The tumor had traveled back slowly through the orbital fossa following the nerve to the chiasm, and then the surrounding tissue of the brain. The boy died within the month (Fig. 5).

CASE 9.—Boy, aged 2, had a sarcoma involving the left antrum and extending into the orbit. The eye was very prominent. Operation was performed on both sides, followed by removal of the tumor and with thorough cauterization of all the affected area. This was a desperate case. The child died four months later. The tumor mass had been growing perceptibly for six months.

CASE 10.—G. G., boy, aged 19 years, had an exophthalmic and blind right eye. Vision in the left eye was 20/70. The papillomacular bundle of fibers was intact. An orbital sarcoma involved the optic nerve of the right side. The patient was operated on, May 16, 1912, following ligation and excision of the external carotids and branches of both sides. The orbital cavity was completely exenterated, following a circular skin incision near the margin of the lids, leaving the skin to be transplanted into the bony cavity. The patient made an excellent recovery from immediate operation. The tumor in this case had extended back to the chiasm, leaving only the nasal field of the left eye intact, showing how the function of the optic nerve to the right side and fibers going to the nasal side of the left eye had been destroyed, with their respective fields. Opthalmoscopically the right optic nerve was greatly inflamed from the growth. The left optic nerve on the nasal side was swollen and apparently choked. On the temporal side it was congested, but not swollen or choked, suggesting a separate sheath for each side. Report March 23, 1915; patient living, tumor has not returned, now blind in left eye, married in August, 1913, total loss of vision January, 1914. Is now strong but cannot see and is mentally confused under certain circumstances. I was surprised to learn that he is still living (Figs. 6 and 7).

CASE 11. — Boy, aged 11, had an angioma of the cheek as well as a fibrosarcoma which extended down toward the supra-orbital notch and through disturbance of circulation had caused a subconjunctival hemorrhage into the conjunctival sac. March 2, 1912, both externals were ligated. The angioma was removed from the cheek. The tumor was removed from the brow. A letter March 7, 1915, stated that the patient was well and that there was no sign of return.

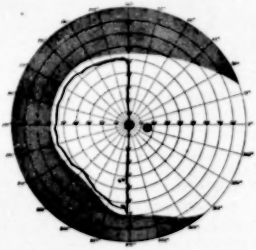

Fig. 5.—Field of right eye in Case 8.

CASE 12.—S., a young woman, schoolteacher, with osteosarcoma, involving subperiosteally the alveolar process of the inferior maxilla, increasing the size of her chin to a marked deformity, complained, March 11, 1912, of pain radiating through her face and head. The growth involved both sides of the inferior maxillary bone to a point one-half inch back of the mental foramen. At the time of ligation and excision of external carotids, I made an incision, thinking I might remove some of the deformity, but decided on investigation to leave it with the hope of shrinkage. This has taken place perceptibly. Three years have passed. She is now living and states that though she has a prominent chin, she is without pain and feels well—better than one year before the operation.

CASE 13.—Mrs. W. H. M. had sarcoma involving the left side of the orbit, beneath the frontal bone, with swelling due to edema extending over her left temple. Sept. 14, 1910, the orbital tumor was removed and examined, and found to be a sarcoma. The patient refused operation on the external carotids at this time, but on Aug. 18, 1911, she returned with edema over the temple from another mass in the orbit. She was now persuaded to have the external carotids and branches on both sides ligated and excised. The mass was not removed. She is at present living at Athens, Texas, and a recent letter states that she is now blind in that eye. Her vision was good when the carotid operation was performed (Fig. 8).

CASE 14.—A boy, aged 12, November, 1910, had a large mass of adenomatous tissue growing on the surface of the tongue, principally the right side, about midway its length. In addition to this, he had a tumor the size of a pullet's egg growing in the submaxillary space of the same side. After ligation and excision of both sides the adenomatous tissue was removed and the base cauterized on the tongue. The tumor, which proved to be adenoma, was also removed and the wound closed. Healing was tardy and interrupted through infection, which yielded to antistreptococcic serum. The patient has been entirely well since.

CASE 15.—Mrs. B., May, 1914, had a teratoma of the right side of the palate. She had had a fibroma removed from the uterus two years before. She had not noticed the least inconvenience from the mass growing between the muscles of the palate until a tonsillar infection was superimposed, when she had difficulty in swallowing and in breathing. Her physician, on inspection, discovered that the oropharynx was almost closed. When tonsillitis had subsided, she was sent to see me. On examination I found half of the oropharynx closed with a mass which pushed her tonsil down. It was smooth and gave no evidence, from appearance either anteriorly or posteriorly, that it was so large. To avoid hemorrhage and to enucleate the tumor, ligation and excision was done on both sides. A teratoma, 2 by 3 inches, kidney shaped, was removed through the separated muscular fibers, following an incision through the mucous membrane in the axis of the fibers. There was no bleeding, and dissection of the tumor was accomplished with the finger and blunt tonsillar dissector. The patient is living and well. The pathologist found connective tissue, cartilage, myxomatous tissue, some epithelial cells and some adenomatous tissue and classified it as a teratoma, not a dermoid.

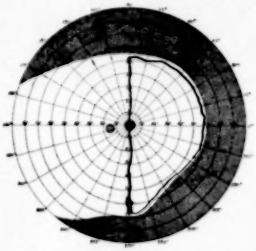

Fig. 6.—Field of left eye in Case 10.

CARCINOMA CASES

CASE 16.—H., man, aged 60, underwent a double excision and ligation, in which a cancerous mass, far advanced, was removed, July 3, 1908, in the region of the superior carotid triangle, it being a metastastic tumor from an old carcinoma of the eye. A complete exenteration had been done fifteen months before. The patient improved for the first two months, holding his own for two months following, and then declined in strength and was advised to go home and was also told that he might expect the worst. Although his life was lengthened, he died some months after the operation.

CASE 17.—T., man aged 61, had a carcinoma of the right side of the tongue which had increased in size and had been recognized for six months. May 15, 1908, the external carotid and branches on one side were ligated and excised, half of the tongue removed and all glands carefully dissected. The right hypoglossal nerve was sewed to the base of the tongue. The patient lost but little blood and slowly recovered from the effects of the operation. Two weeks later the external carotids in the left side with all glands were similarly treated. One year after the operation the patient was alive. Since that time, I have been unable to gain any information as to whether he is living or dead, but concede his death.

Case 18.—J. T. G., man, aged 35, Dec. 1, 1911, had a carcinoma involving the ethmoidal cells. I operated on both external carotids the same day. Some days later all of the ethmoidal cells were removed. The paient died in October, 1912.

Case 19.—B. T. C., aged 48, June 5, 1911, had carcinoma of the ear. The carotids of both sides were operated on, all glandular involvement and a hard carcinoma mass

Fig. 7 (Case 10).—Orbital sarcoma.

removed from back of the cartilage of the left ear. The ear was replaced and the patient slowly made a good recovery and was living when last heard from.

Case 20.—J. S. G., man, aged 46, Dec. 16, 1911, was operated on for metastatic carcinoma of the lip involving the parotid gland of the right side. From pressure of this gland the patient had suffered excruciating pain throughout many branches of the trifacial nerve. The excision and ligation operation of both sides was followed by dissection of the involved parotid which had locked the jaws; the tumor extended well up beneath the lobe of the ear, and was dissected away from the internal carotid artery and jugular vein. This patient was made more comfortable, and died Oct. 1, 1912.

Case 21.—J. C. A., aged 52, June 22, 1912, had carcinoma of the lip. All branches of both carotids were excised, the cancer of the lip removed and all glands dissected. The patient was seen several months afterward and showed no evidence of return. I presume that the patient is now dead.

Case 22.—Mrs. S. A. G., aged 76, July 6, 1912, had epithelioma of the ear, left side, and epithelioma of the skin near the right inner canthus. Following carotid operation, the ear was removed and the cancer of the inner canthus dissected. The parts have healed and there is no evidence of return. She had double cataract as well. These were removed, and normal vision obtained. Recent report states that the patient is living.

Case 23.—Mrs. H., of Gilmer, Texas, was operated on, June, 1911, for carcinoma of the orbit, involving the eye and surrounding tissues. Ligation and excision of all branches was done, on both sides, and the tumor mass with the ulcerating eye removed. Several days later erysipelas developed and there was a serious infection which gradually subsided, the patient making apparently a good recovery. She was living at Gilmer in December, 1912. I have not been able to hear of her since.

Case 24.—C., man, aged 58, of Grand Saline, Texas, July, 1914, had a carcinoma involving the tongue wall on the left side, of six months' duration. Ligation and excision was done on both sides, all branches, and the glands dissected. One half of the tongue was removed to the base and the whole area closed with uninterrupted sutures without raw surface being left. The patient is now living but probably has metastasis in the neck. A letter states that there is swelling on that side.

CONCLUSIONS

1. (*a*) All branches of each external carotid must be tied.

(*b*) In the majority of cases both sides can be operated on without an interval of two weeks, and this without shock.

(*c*) Sarcoma offers the best results.

2. It may be noted that all the sarcomas occurred on the left side, except two. As the common carotid arises from the transverse portion of the aorta, a morbific tendency might find nourishment in excess from this circumstance.

3. Circulation from the ophthalmic branch of the internal carotid does not prevent the value of the operation in the orbit, as Dawbarn concluded.

4. In this group of cases, sarcoma occurs in all ages. In females it occurs most often beyond the age of 19, and in males, under this age.

5. Cancer occurs in this group oftener in males and only in one case under 46 years of age, which was the ethmoidal case of 28, coming under Case 6 (sarcoma).

6. I have not found in any of my cases an anomaly in the carotid distribution.

7. The results seem best when the tumor is not disturbed, suggesting traumatism at the sight, always an exciting factor.

8. Though I have not practiced ligating uniformly the accompanying veins, it may be better to do so.

9. Although certain carcinoma cases were treated with the Roentgen ray, no good results were observed.

10. In two cases in which tumors involved the optic nerves — Case 9 secondarily and Case 10 primarily —both demonstrate that the optic tracts reach the chiasm and there decussate; when a nerve proceeds to its destination, the respective nasal half possibly, and the temporal half probably are separately sheathed, as is also the papillomacular bundle of fibers, which are intact and which may be disturbed but not destroyed.

Fig. 8 (Case 13).—Sarcoma of orbit.

These two cases suggest that, when the temporal sides leave the chiasm, these bundles become invested in a manner to permit an uninterrupted spread of an inflammatory process of either nerve to the nasal half

of the other—this being limited as described in Cases 8 and 10.

I have known of the pia sending out trabeculae between fibers, splitting them up into bundles, each fiber having its own myelin sheath, but not a neurolemma as other nerves. A later report might demonstrate a distinct investment of the respective halves, but more likely the temporal side and not the nasal on account of anatomic developments.

One other explanation might account for the foregoing observation: the extension of the inflammatory process of the optic nerve might follow the nerve around on the side involved back of the chiasm, and in this manner cause complete destruction of the nasal half before they decussate, the choking of this part of the disk in the opposite eye taking place from that fact.

There of course is an excellent reason why the operation is of value in sarcoma and to a more limited extent in carcinoma. Our knowledge of metastasis is based on the morphology of these tumor masses, and we all know that the cells of the sarcoma variety make up the walls of the blood vessels, the cells themselves depending on this rich blood supply for their growth. When this is cut off, they necessarily shrink and cease to grow; whereas, in carcinoma, the blood vessels are not involved. The lymph channels remain and can easily carry off some of the infection to lymph nodes elsewhere, extending the progress regardless of the blood supply.

My observation has been that a distinct deterring influence is exerted in the carcinomatous growth, but that is the best that can be said. On the other hand, in sarcoma, your result can in a way be measured by the completeness of your operation in tying off and destroying all of the branches so that anastomoses will be controlled, whatver the cause of malignancy; the lack of nourishment influences the growth.

The technic of the operation as well as the things to avoid while operating will interest you only when a case presents itself. This information you can find without difficulty.

ABSTRACT OF DISCUSSION

DR. C. G. SAVAGE, Nashville: The subject presented by Dr. Cary is worthy of our deepest consideration. I have never had any ligations done.

One case I recall especially because of a second recurrence in a strange location. The cancer involved primarily the lower right lid, but later involved the right eye also. My first operation removed the entire lid and the globe. There was a recurrence in the orbit a few months later. In the second operation I removed the entire orbital contents. Without further manifestations in the orbit, a tumor formed on the corresponding side of the neck just below the ear, which was evidently malignant. It seemed to me that the man was doomed. I do not like to operate below the chin line, so I had one of our surgeons operate for the last malignant growth. The operation was done very thoroughly, the wound was left open and Roentgen-ray treatment instituted. Afterward I saw the patient frequently and I think I can safely say that at least a year after the operation there had been no recurrence. At that time the man was rejoicing because we had told him we could give him only temporary relief. The presentation of this subject ought to have a tendency to further nullify the recurrence of such tumors.

DR. E. H. CARY, Dallas, Tex.: A question has been asked concerning a point which I did not bring out in the paper for the sake of brevity. In carcinomatous growths ligation could only effect a retardation of the growth. You really do not check it as much as you want to check it and the operation is not a success in carcinomatous growth. If there was some plan by which the lymphatic channels could be found and cut off, I think you could find a method of cutting off the spread of carcinomatous growth. In carcinomatous growth it is true that best results can be obtained if you can tie and cut off all the branches on each side and not disturb the main growth at all. One case of sarcoma involving the inferior maxillae, without much traumatism, I recall. This sarcoma receded and the woman has been teaching school for three years. I began operating with the idea of removing the growth, but when I saw it I knew it would remove almost the entire chin, so I proceeded as mentioned.

INTRATHECAL INTRACRANIAL INJECTION OF AUTONEOSALVARSANIZED SERUM FOR SYPHILITIC HEADACHE*

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Among the various methods devised for the use of salvarsan or neosalvarsan in the management of cases with involvement of the nervous system caused by recent or old syphilitic infection, the autosalvarsanized serum method appears to be the most successful. Such seems to be the view held by the majority of observers who are familiar with the subject. My experience in almost a hundred cases of syphilitic and parasyphilitic affections of the cerebrospinal axis is entirely in accord with that of others. Comparing this method with the intramuscular and intravenous, the results obtained are by far superior to those in the two latter procedures. The reason of it has been emphasized by Swift and Ellis, the originators of the method, and has been sustained by subsequent observers. Indeed the statement is a logical one that by subarachnoid injections a spirocheticidal substance is brought into direct contact and immediate relation with the nervous tissue and the spinal fluid, and consequently with the etiologic agent disseminated in both.

The introduction of salvarsanized serum may be accomplished in two ways: either intraspinal or intracranial. The intracranial method has been applied chiefly in cases of paresis, as it has been shown by a number of writers that only slight beneficial effect, or no effect at all, resulted from the intraspinal injections in this particular affection so far as mental symptoms are concerned, although some improvement has been obtained in the condition of the cerebrospinal fluid, particularly with reference to the cell count. In my experience with twenty-seven paretics, amelioration in the mental manifestations was observed in ten patients. Nevertheless, if a comparison is drawn between the syphilitic affections in which the brain symptoms predominate and those in which the cord symptoms are the most conspicuous, I may say that the autosalvarsanized serum, introduced through lumbar puncture, has given me, speaking generally, more favorable results in the latter than in the former cases.

It is therefore logical to presume, at least, that the circulation of the cerebrospinal fluid is such that it is not capable of transmitting the intraspinal injected specific remedy in an upward direction toward the upper portion of the cerebrospinal axis. At this juncture it is interesting to take notice of the important experimental work done with the object of verifying the above clinical observation.

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* From the Neurological Department of Mount Sinai Hospital.

Harry Campbell[1] gives the following account of experimental work in the *British Medical Journal:*

If trypan blue be injected through a trephine hole into the cranial subarachnoid space above the tentorium cerebelli, not only the cortex cerebri, but the entire cerebrospinal axis is found, postmortem, to be stained. If, on the other hand, the pigment be injected into the spinal subarachnoid space by means of a lumbar puncture, the cortex cerebri remains unstained, the staining in these cases being confined to the spinal cord and brain stem. It would appear that the cerebrospinal fluid flows from the cranium spinalward—probably a meager current—and also that some slight ebb and flow takes place between the fluid in the subarachnoid space at the base of the cranium and the spinal subarachnoid space, in accordance with variations in the quantity of intracranial blood.

More recently, William C. Woolsey[2] repeated Campbell's experiments with trypan blue and arrived at the same conclusion, namely, that when administered intraspinally its diffusion to the cranial cavity is less intense than in the cord. He could see that the meninges of the cord were stained a deep blue up to the level of the cervical enlargement from which point, by gradual gradations, the intensity of the color diminished to the foramen magnum. The periphery of the cord itself just under the pia was stained a distinct blue for a distance of from 0.5 to 1 mm. below the surface. No such invasion of the brain above the medulla could be distinguished.

Wardner[3] and Martland have made postmortem injections of carbolfuchsin into the spinal subarachnoid space on several cadavers. In no case, they say, even with the bodies placed head down and in almost erect position, has any staining of the structures beyond the posterior fossa been observed.

All these facts throw considerable light on the subject and explain fully the comparative failure in treatment of paresis or other syphilitic affections of the brain by the exclusive intraspinal introduction of salvarsanized serum.

The direct intracranial method has at this time quite a number of advocates. Levaditi, Marie and Martel, Neisser and Pollac, Marinesco and Minea, Berriel, Balance and Campbell are the earlier writers who almost simultaneously utilized salvarsanized serum for intracranial injections. All of them observed favorable results. Wardner, in a recent contribution,[3] reports six cases which he treated in collaboration with Martland, Eagleton and Beling by the intracranial method, from which he obtained some encouraging effect.

That the introduction of autosalvarsanized serum into the subdural space of the cranium may be a method *par excellence* in some select cases in which cerebral symptoms predominate; that the previously mentioned experimental work with regard to the current of the cerebrospinal fluid which is directed from the cranium spinalward, but not vice versa—both facts find their striking corroboration in the events of the following case, which seems to possess all the characteristics of a carefully carried out laboratory experiment.

J. K., tailor, aged 40, contracted syphilis at the age of 25. About two years ago he commenced to have pain in the upper cervical region. At first nocturnal, the pain gradually became continuous. The patient relates that the several physicians whom he consulted at first all agreed that in view of the history of syphilitic infection it was advisable to administer salvarsan, to which the patient consented.

The slight effect produced by the first injection necessitated repetition of the treatment and he received five injections, all intravenously. As the headache continued with greater severity, his last physician, Dr. Bellak, referred him to my service in the Mount Sinai Hospital. On examination the following condition was found. He suffered intense pain in the entire cervical and upper dorsal regions but especially in the occipital region and over the vertex on the left side. The pain was so severe that for nights he could not sleep. He was unable to eat, lost his appetite and began to lose in weight.

Physical examination showed: slight Romberg sign, markedly increased patellar tendon reflexes, but no other abnormal reflexes. He had frequent and sometimes imperative micturition and defecation. There was complete loss of sexual power. There were no changes in the objective sensibility. The mentality was fairly good.

The eye examination by Dr. LeFever showed a double primary optic atrophy well advanced; no response to light in either eye; accommodation and convergence were diminished; the visual fields symmetrically contracted; pupils unequal: right, 2.5 mm.; left, 3 mm.

A Wassermann test made on admission to the hospital by the pathologist, Dr. Rubenstone, proved to be strongly positive in the serum and spinal fluid.

Urinalysis showed traces of albumin. The thoracic and abdominal viscera were normal. The diagnosis was made of cerebrospinal syphilis.

In view of the previous intravenous injections of salvarsan which, according to his physician, gave no results, the intraspinal injections of autoneosalvarsanized serum were undertaken. The patient was given, intravenously, 0.9 gm. of neosalvarsan. About thirty minutes later 50 c.c. of blood were drawn from the median basilic vein. The blood was set aside for clotting and then centrifuged. It was then heated to 56 C. (132.8 F.) for half an hour and placed in the ice box over night. The next day the serum was diluted with a normal solution in freshly distilled water to make in all 30 c.c. A lumbar puncture was immediately made, 30 c.c. of spinal fluid were withdrawn and replaced by the 30 c.c. of the neosalvarsanized serum.

On the day following the treatment the pain in the head and in the neck was slightly improved, but very soon the same suffering returned. The condition of the sphincters began to improve rapidly; the tendon reflexes became less prompt. As the patient's suffering was unusually severe and he could not sleep, two weeks later another identical treatment was given and again without any effect on the headache. The withdrawn spinal fluid showed still a strongly positive Wassermann reaction and increased albumin content.

During a period of twenty-one weeks the patient received seven intraspinal injections of autoneosalvarsanized serum at two and three weeks' intervals. With the exception of the first, for each of the six other injections, 0.6 gm. of neosalvarsan was used. The Wassermann reaction remained positive. While the symptoms referable to the spinal cord have all disappeared, and the pain in the neck, probably due to a syphilitic cervical pachymeningitis, has greatly improved, nevertheless the headache remained unaltered in severity. It was particularly intense in the left parietal area. The insomnia was exhausting to the patient. The eyes were repeatedly examined and found in the same condition.

As the patient persistently pointed to the left parietal region as the seat of the intense pain, the thought occurred to me that we may deal here with a localized syphilitic thickening of the skull. He had been given, symptomatically, all coal-tar preparations, sedatives, mercurials and iodids, and there was no relief from the excruciating headache.

A decompressive operation was proposed to the patient and he promptly accepted it. Dr. N. Ginzburg removed a large flap of bone over the left parietal region. The skull was

1. Campbell, Harry: Brit. Med. Jour., March 14, 1914, p. 577.
2. Woolsey, W. C.: Experimental Subarachnoid Injections of Trypan Blue, Jour. Nerv. and Ment. Dis., July, 1915, p. 477.
3. Wardner, Drew M.: A Report of Five Cases of the Intracranial Injection of Auto-Sero-Salvarsan, Am. Jour. Insan., 1915, lxxi, 459.

found decidedly thick. The membranes were seen covered with light gray patches of the size of a ten-cent piece, four in number, and quite a large number of very small patches irregularly distributed. The dura was not opened.

On the day following the operation the patient felt some relief from the headache, but twenty-four hours later the pain returned with the usual severity. The wound healed up very promptly. The patient kept on suffering for the following two weeks. Insomnia, and anorexia were pronounced.

It was evident to me, in view of the fact that the cord symptoms were controlled by the intrathecal spinal injections of autoneosalvarsanized serum, that the latter did not reach the subarachnoid space of the cerebrum. Campbell's remarks[3] regarding the experimental work on the spinalward current of the cerebrospinal fluid appeared to me strongly applicable to the present case. An excellent opportunity presented itself here for injecting the cranial subarachnoid space. Accordingly the patient was given an intravenous injection of 0.6 gm. of neosalvarsan and serum was prepared by the pathologist in the adopted manner for the following day.

The patient was etherized; a lumbar puncture made, 30 c.c. of spinal fluid were withdrawn. The wound of the skull was reopened and 30 c.c. of the neosalvarsanized serum were injected carefully under the dura in close proximity to the large gray patches. On the day following the operation the patient began to feel better. The headache gradually subsided. He commenced to sleep at night, the appetite improved rapidly. The scalp wound healed up in ten days. The patient left the hospital two weeks later totally free from pain. He began to gain in weight and felt happy. Since then he has reported to the out-patient department regularly every week for a period of four months. No recurrence of pain has been observed. While the patient's general condition is, at present, normal, the condition of the eyes remains unaltered.

The present case appears to be of great importance from a therapeutic standpoint, also because of a clinical corroboration of the physiology of the movement of the cerebrospinal fluid.

The fact that seven injections of neosalvarsanized serum into the spinal subarachnoid space relieved and finally removed the cord symptoms alone and brought no relief whatever to the intracranial manifestations, points logically to a strict parallelism between this clinical observation and the experimental observation with trypan blue previously mentioned.

It is evident that had a good upward flow existed in the cerebrospinal fluid, the large amount of neosalvarsan injected in the spinal intrathecal space would have carried its spirillicidal effect to the neurons of the cortex cerebri. The rapid and remarkable effect produced on the brain tissue by direct contact with neosalvarsanized serum is undoubtedly equal if not superior to a direct laboratory experiment carried out with mathematical precision. My patient will perhaps require repeated intracranial injections, but the result obtained so far points strongly to the intracranial route as being the only one to be adopted in cases with conspicuous and persistent cerebral manifestations.

1812 Spruce Street.

Paranoids and Brilliancy.—The paranoids are often supposed by an innocent public to be brilliant because they are frequently fluent talkers, plausible, and full of pseudologic, and the world, especially today, is prone to worship the god of verbosity. If I were breeding people as we breed horses, no man with a gift of gab, a different quality than gift of speech, would be permitted to come into my experiment station.—Charles W. Burr, M.D.

SPONTANEOUS EVOLUTION OF A TRANSVERSE PRESENTATION

WITH REPORT OF A CASE *

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NEWARK, N. J.

A transverse presentation, if unaided by art, may have five possible terminations: 1. Impaction, with excessive retraction of the upper uterine fibers, rupture and death of mother and fetus from hemorrhage or exhaustion. This is by far the most common outcome of neglected shoulder presentations. 2. Spontaneous birth by a doubled body, the condition termed "evolutio conduplicato corporis" by Roderer, in which the head and thorax are jammed tightly into each other and are born together. 3. Spontaneous rectification, that is, under exceptional conditions the lower fetal pole may be pushed downward and finally become the presenting part. 4. Spontaneous version, in which, as the result of excessive unilateral contractions of the uterus, the upper fetal pole is pushed downward and actually presents at the vulva. 5. Spontaneous evolution, as described by Douglas of Dublin. In this favorable termination, the presentation remains unchanged, but the trunk and buttocks, impelled by powerful contractions, roll past the shoulder and extrude from the vulva before the presenting shoulder.

It was my good fortune to attend a case of labor with transverse presentation, which terminated with the interesting phenomena of this last form of natural delivery. Inasmuch as Prof. J. W. Williams of the Johns Hopkins University cites in his treatise but one instance of such an occurrence in his varied and extensive obstetric experience, the report of this case must prove at least of statistical value.

Mrs. B., a stocky young primipara, aged 20, height 4 feet 10 inches, weight 140 pounds, was admitted into the maternity ward of the Newark Beth Israel Hospital, July 12, at 5 a. m. in advancing labor. Her pelvimetric measurements were those of a slightly justomajor pelvis; interspinous 27, intercristal 30 and external conjugate 22 cm. The junior intern, Dr. Hirsch, examined her on admission and found the os dilated 4 fingers, but because of a tense and bulging bag of waters, he alleges, he was unable to make out the exact presentation; he could find no fetal heart sounds. At 7:30 the bag ruptured and the right arm prolapsed as also some coils of cord, which had no pulsation. He at once summoned me to the case. The diagnosis was apparently a left scapulo-anterior, so I ordered ether anesthesia in expectation of doing a version or decapitation if I found the former measure too hazardous. I might add that the patient was having terrific bearing-down pains.

Before she was fully under the anesthetic, to my great surprise, I observed the shoulder rotate forward under the pubic arch, sink downward and become visible at the vulva. With the next pain, which was unusually violent, the dorsum, laterally bent, appeared, then the buttocks, legs, posterior shoulder and arm. The head still remained in the pelvis; tilting the trunk toward the abdomen of the mother and making moderate traction effectually liberated it.

The fetus had some noteworthy characteristics; it was the size found in an 8-months' pregnancy and weighed 5½ pounds; it showed signs of commencing maceration, as evidenced by peeling of the skin, in several small areas; the neck was peculiarly elongated so that it had a diameter of 1½ inches; the head was of conical shape and terminated

* Presented before the Clinical Society of the Beth Israel Hospital, July 27, 1915.

with a meningocele; all the cephalic bones were widely separated and the umbilical cord, more than a yard long, tapered almost to a point at its umbilical insertion.

Outside of a slight rise of temperature the first four days of the puerperium, which was probably sapremic, the patient made an uneventful recovery.

It can be readily understood that evolution is impossible unless three essential requirements are fulfilled, namely, a roomy pelvis, a small, easily compressible fetus and powerful bearing-down pains; all these factors were manifested in this case.

In the rather meager literature of this remarkable resourcefulness of nature, a few instances of living children have been reported. In the treatise on midwifery by Prof. William Thomson Lusk, my lamented teacher, mention is made that Kuhn cites a case in which a living child was born, weighing 4½ pounds, after the spontaneous evolution of a shoulder presentation. Also that Simon, according to Spiegelberg, collected 125 cases in which 14 infants were born living; three of the mothers had died.

The determination whether spontaneous delivery will be effected in a particular instance is extremely difficult and ordinarily we should waste no time in anticipation of such a favorable outcome; this is especially true if the diagnosis of transverse presentation is made early before the bag of waters has ruptured. But if the expectant mother is in good condition, if the fetus is premature, if excessive retraction has already taken place making internal version a dangerous procedure, and if evidence of beginning evolution is already present, we might for a reasonable time adopt the policy of "watchful waiting" rather than proceed at once to decapitation. Indeed, in favorable instances, if the pelvic floor is offering an unyielding obstacle to Nature's attempt at delivery, we might expedite matters by following the recommendation of Dr. Taylor and overcome the resistance, by making deep incisions into the distended perineum to the extent of 3 or 4 inches, at the vulva.

56 Boston Street.

APPENDECTOMY THROUGH THE RIGHT INGUINAL CANAL

GEORGE DE TARNOWSKY, M.D.
CHICAGO

Removal of the appendix through the right internal inguinal ring is not a new procedure; it has probably been done, in a more or less unpremeditated manner, by many surgeons; but, so far as I can learn, the method has never been advocated as a justifiably integral part of a right inguinal herniotomy.

The now well-established custom of removing the appendix whenever the lower abdomen is opened led me to adopt the habit of carrying out the same prophylactic procedure during the performance of all right inguinal herniotomies, whether of the oblique or direct type. The femoral ring is usually too far removed for this purpose. I have performed the operation over fifty times with uniform good results. In no case has infection occurred, either within the peritoneal cavity or in the inguinal canal; the wounds have healed with normal rapidity and, so far, no relapses of the hernias have been reported. The patients have not complained of more pain than is habitually experienced in simple herniotomies; neither has nausea or meteorism been accentuated by the added intraperitoneal work.

The cecum lies in the right iliac fossa, directly on the iliac fascia. Its lower end is from 4 to 6 cm. from the internal ring, depending on whether it is in a distended or contracted condition. When it is full, the lower end lies just over the outer half of the inguinal ligament. The outer wall or outer right margin is in contact with the lateral abdominal wall. It is always sufficiently mobile so that it can be delivered through the ring, partially or in toto, depending on the size or distensibility of the latter. As for the appendix, the only practical point to remember is that it is given off directly from the mesial posterior wall of the cecum, behind and beneath the termination of the small intestine. Delivery of the cecum must be resorted to whenever the tip of the appendix is retrocecally located, its mesentery is abnormally short, or it is displaced by kinks or adhesions.

TECHNIC

1. The usual herniotomy incision is employed, opening the inguinal canal.

2. The sac is separated from the cord, the sac opened, and its contents—if any—dropped back into the peritoneal cavity.

3. The contents of the inguinal canal are protected by means of a gauze pad.

4. The index finger of the right hand is passed through the sac opening obliquely upward and outward, that is, continuing in the direction of the canal.

5. The finger is swept along the iliac fossa from without inwardly until the cecum is encountered. The appendix can often be recognized by the touch, and its relative position ascertained.

6. If the internal ring admits two fingers or can be readily stretched to admit them, I am in the habit of introducing both index and middle fingers, grasping the cecum between them, and delivering it. When the appendix is freely movable, it has often been possible to hook the index finger over its base and thus deliver it, only one finger being necessary for this maneuver. With a small, not readily distensible ring, by passing a straight intestinal forceps of the Barrett type alongside of the index finger, the cecum can be identified, grasped by the forceps and delivered. Finally, I have lately tried the expedient of putting on a surgical cotton glove over the rubber one in order to obtain a better grasp of the slippery cecum or appendix. The experiment is worth trying, but one must get accustomed to the clumsy thickness of the cotton glove.

7. The removal of the appendix itself presents no great difficulties. Only three points in technic need be emphasized:

(*a*) Having grasped the appendix or its mesentery by means of a suitable forceps, as much of the cecum as possible should be replaced into the peritoneal cavity before going any further. This will avoid any possible danger of strangulation.

(*b*) The purse-string suture is placed around the base of the appendix before it is amputated or its mesentery is tied off. This obviates the annoying possibility of the stump slipping out of sight before the operation is completed. In other words, it gives the operator something to hold on to.

(*c*) In the retrocecal type of appendix, with very short mesentery, it is much easier to amputate the appendix first at its base, between two clamps, dissecting it out from below upward and controlling the blood supply by means of a running suture of fine silk or catgut. These closely adherent retrocecal cases are the only difficult ones to remove. It is a waste of time to try and reach the tip of the appendix first; the tension is so great that either the mesentery or appendix will tear. Suture of the short meso-appendix must be done by means of a short full-curved needle; here again it has seemed easier to begin proximally, that is, at the stump of the appendix, and suture upward, using the glover's lock-stitch.

8. The hernial sac is closed, and the hernitomy completed. It seems puerile to state that no drainage should ever be used in the canal, but as I have on several occasions been asked this question, it has seemed best to lay emphasis on this particular point.

COMMENT

As technic and confidence in the procedure improved, the time element has been rapidly reduced. Anesthesia is now prolonged an average of five minutes, so that undue lengthening of the operation cannot be adduced as a contraindication. The alleged danger of infecting the inguinal canal with resultant recurrence of the hernia, which has made a number of clinicians hesitate to adopt the procedure, has proved to be nonexistent.

In my series of cases, 30 per cent. of the appendixes removed were found to be grossly pathologic; hence I feel convinced that inguinal appendectomy is a rational procedure. Of course, I do not advocate the inguinal route in nonherniated patients; neither would I advise that an acute appendix be removed by this route, even in the presence of a coexistent right-sided hernia. I am of the opinion, however, that, in all right inguinal herniotomies, the removal of the appendix through the sac and ring is a legitimate, logical and comparatively easy procedure.

Should the necessity of drainage ever present itself, it is a simple matter to pass a curved forceps through the sac opening to the iliac crest and make a stab drain. This was done in Cases 528757 and 530288 of my Cook County series. The first case proved to be one of tuberculous peritonitis with a badly kinked retrocecal appendix; the second, wrongly diagnosed as a strangulated hernia, turned out to be a gangrenous appendix with abscess in the scrotum. Both cases healed satisfactorily.

30 North Michigan Avenue.

A PLAGUE-LIKE DISEASE OF CALIFORNIA GROUND SQUIRRELS AFFECTING MAN IN OHIO

WITH A DEMONSTRATION OF SPECIMENS *

W. B. WHERRY, M.D.
CINCINNATI

SUMMARY

Following the discovery of a plague-like disease, due to *B. tularense*, by McCoy and Chapin in California, W. B. Wherry and B. H. Lamb described the occurrence of the same micro-organism in two cases of conjunctivitis in Ohio. Both cases were characterized by ulcerative conjunctivitis involving the palpebral conjunctivae, accompanied by lymphadenitis of the preauricular and cervical glands on the corresponding side, a high temperature and marked prostration.

These patients were under the care of Dr. Derrick T. Vail and Dr. Robert Sattler, respectively, and their clinical courses have been published in the *Ophthalmic Record* (1914) and the *Archives of Ophthalmology* (1915).

In searching for the probable source of infection in these two cases the following points were considered: Both patients were affected with the virus affecting rodents in California; both patients had handled rabbits previous to the onset of the disease; there were numerous rumors that wild rabbits in Ohio, Kentucky and Indiana were dying off in large numbers of some disease. With the kindly cooperation of Dr. J. H. Landis, health officer of Cincinnati, the same disease due to *B. tularense* was discovered in wild rabbits found dead in southeastern Indiana.

The virus (a small encapsulated rod) is extremely difficult to demonstrate and is best stained with aqilin Hoffman's violet or gentian violet. It could not be grown on any medium except the coagulated egg-yolk recommended by McCoy and Chapin.

All the esential features of the disease as it occurred in man could be reproduced by placing a little of the virus in the eye of a rabbit or guinea-pig.

Infection also takes place, in rodents, through the gastro-intestinal tract, through the nasal mucous membrane, and, as shown by McCoy and Chapin, squirrel fleas (*Ceratophyllus acutus*) may successfully transfer the virus. As the recent experiments of Dr. Wayson show, the house fly and the stable fly (*Stomoxys calcitrans*) may also transmit the virus shortly after feeding on an infected animal.

It seems likely that this rodent disease is widely distributed and that through the watchfulness of health officers further cases will be discovered.

* Read before the Section on Preventive Medicine and Public Health at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

ABSTRACT OF DISCUSSION

DR. G. W. MCCOY, Honolulu: It is gratifying that what we thought was a problem of purely scientific interest should have turned out to be one of practical importance in preventive medicine. Apparently we have another disease to add to the list of those traced primarily to the lower animal and occasionally transmissible to man. I would like to emphasize that this is an example of a plague-like disease, but one not due to a pest-like bacillus. It is easy to get these things confused. The organism, as Dr. Wherry has said, is in no way similar to the plague bacillus, yet in practically all the animals with which we worked the symptoms and lesions were similar to those of plague. We thought we were fairly familiar with plague, but when the first case of the new infection came under observation we would have fallen into error but for the fact that we insisted on cultural verification of every case. We carried the infection on in animals, and soon found that we were dealing with a disease of rodents other than plague. A great similarity to the lesions of the plague was the most striking point about it. After we had had a great deal of experience with this disease to supplement our experience with plague, we could in a majority of cases differentiate the gross lesions; and of course a microscopic examination would practically always decide the matter at once, and a cultural investigation would invariably do so. Dr. Wherry spoke of the cultures losing their virulence. We found that to be the case with the cultures from squirrels. I do not recall now whether we had any culture that became entirely avirulent. There is one point of importance about the lesions produced by these avirulent cultures, and that is that they produce in guinea-pigs lesions which are practically indistinguishable from those of tuberculosis. I remember when we first observed these subacute or chronic lesions we thought there had been some error in our technic and that we had introduced tuberculosis. We found that this was not the case. I may say that we always kept in mind in our work the possibility of the occurrence of the plague-like disease in man.

DR. N. E. WAYSON, San Francisco: We have duplicated Dr. McCoy's methods of flea transmission of the disease, but were not so successful as he in our results. Healthy animals separated from those infected by wire netting of the same mesh as mosquito netting, with fleas as the only common

carriers, remained well. Our experiments with fly transmission were positive. The stable-fly transmissions were made by allowing the fly, held captive in a vial covered with netting, to bite the infected animal, and transferring it to a normal animal, changing the gauze between bites to prevent possible contact infection of the shaved belly of the normal animal. The stomoxys experiments were successful in a small percentage of cases; but the house-fly experiments yielded nearly 100 per cent. of "takes." The house flies were allowed to feed on, and crawl over, infected viscera, and then crawl over a cocainized eye. This method was positive in transmission, even with a twenty-four-hour interval between the exposure to the infection and to the normal eye.

We have not been successful in transmitting the plague-like disease by the methods of the Indian Plague Commission, in which fleas known to be infected are individually fed, under observation, on normal animals. Our control experiments in plague with this method have also been negative; probably due to an insufficient degree of septicemia in the infected animal used as a host. The same criticism in the plague-like disease experiments will not hold.

DR. NATHAN BARLOW, Cuyamel, S. Honduras: During the last fifteen months in Honduras we have frequently had outbreaks of a peculiar disease which resembled climatic bubo, and was reported by me as an epidemic of climatic bubo, but which resembled very closely the disease described by Dr. Wherry, with the exception that there were no conjunctival symptoms. The gland juice from this disease was found by ordinary cultural methods and by ordinary stains to be free from demonstrable micro-organisms, which agrees with the description of climatic bubo; but it seems to me not impossible that some diseases which are at present classed as climatic bubo may really be infections with the same or a similar organism to that described by Dr. Wherry.

I should also like to bring out the importance of making practitioners in subtropical countries more acquainted with this and all other plague-like diseases, because it has twice happened that my assistants have made the diagnosis of plague, and were ready to bring about measures which would have been sure to quarantine Honduras, and I was able to see the cases before these steps had been taken. By making the proper examinations we were able to demonstrate that the cases were not plague. The serious results of such a mistake would be greater in the case of the Central American countries than in the United States, because the health authorities cannot go so far with the people there as here; and after one such error it is very likely that if true plague were later found, the necessary quarantine measures would be very much delayed.

DR. WILLIAM B. WHERRY, Cincinnati: I do not see any reason why this virus should not produce other types of disease in man besides conjunctivitis. It seems possible, judging from McCoy and Chapin's work, and our own work on animals, that human beings might be infected by way of the gastro-intestinal tract and through abrasions of the skin. The virus might give rise to some forms of rhinitis, sore throat, and tonsillitis. Those are the possibilities. I am not at all certain that the virus is virulent enough to produce septicemia in man. Unfortunately we did not avail ourselves of the opportunity that we had to test that. We should have drawn off some peripheral blood to see if the virus were circulating or not. In one case we took blood rather late, and the results were negative. It seems that the virulence of the virus is diminished by passage through man. Guinea-pigs inoculated directly from a human being died after six or seven days; and in three or four days when it came from another guinea-pig; so apparently the virulence is slightly diminished for rodents by passage through man.

Improving the Race.—Environment and education alone cannot make appreciable progress in the improvement of the race. But with favorable surroundings and the selection of the best types the field for improvement is limitless.—Luther Burbank.

New Instruments and Suggestions

PROTECTION OF STERILIZED DRESSINGS FOR SHIPPING ABROAD

GORDON G. COPELAND, B.A., M.D., TORONTO, ONTARIO

It may be of interest to report by what method surgical dressings have been sent abroad to the Red Cross or other organizations, insuring their arrival in perfect condition. A year ago I was impressed with the unsatisfactory methods of shipping sterile dressings, and devised some of the essential steps in the method I report. I explained the idea to the Canadian Red Cross, and other organizations here who have enthusiastically adopted the method, which has proved practical in actual operation.

Red Cross packing cases are 27 by 15 by 15 inches, outside measurements, with rope handles. These cases fit into transport wagons and are a standard size. They are 26 by 14 by 14 inches, inside measurements. I designed two tin boxes of equal size to exactly fit into the standard Red Cross case. They were first manufactured through the kindness of the Christy Brown Company, and the Macdonald Manufacturing Company is now making the boxes and selling them at the actual cost of material, about 25 cents. The box is according to the following description: 30.2 cm. (11 11/16 inches) wide, 35.1 cm. (13 13/16 inches) long, 34.7 cm. (13 11/16 inches) deep, outside measurements. All edges are soldered. There is a rim or ledge turned in all around the open top, the ledge being 0.8 cm. (5/16 of an inch) wide. There are two lids: the first is of flat tin which is to be soldered to the top ledge when the dressings are in place. It is 29.6 cm. (11 11/16 inches) wide, by 34.7 cm. (13 11/16 inches) long. From one corner a triangle is cut off, 3 cm. (1 1/4 inches) on two sides. On the under surface a wire ring is soldered, and under this another slightly larger triangle of tin is soldered to make the corner the same size as before it was cut. This ring is for tearing off the soldered lid when necessary. A top lid with a turn down of 1.8 cm. (1 1/16 of an inch) is put on over all.

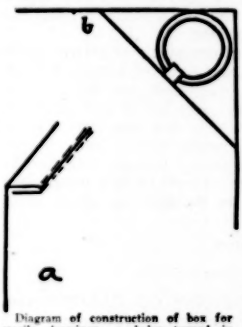


Diagram of construction of box for sterile dressings; *a*, ledge turned in around open top; *b*, ring for purpose of opening box.

The dressings are packed into Canton-flannel bags which exactly fit the tin boxes. In order to have the right shape, the bags are placed in the tin box first, and the dressings, such as gauze wipes, compresses or surgical pads made to the standard Red Cross sizes, are carefully packed into the Canton-flannel bags. When full, the bags are taken out of the tin boxes, and sewed up with a running or overcast stitch which can be easily undone. The bags are marked with a table of contents and the name of the society making them. They are then wrapped in sheets so as to be handled without soiling. The bags of dressings are then steam sterilized under high pressure on two occasions, and are absolutely sterile. The tin box is flame sterilized by pouring in methylated spirits and lighting it. The first tin lid is also flame sterilized at the same time. The boxes become nearly red hot, and absolutely sterile. A nurse, wearing sterile gloves, packs the sterilized unwrapped bags into the sterile tin boxes, and the sterile tin lid is put on with the ring up. This lid is then soldered all around and at this stage, every crack being hermetically sealed, the interior of the box and the contained dressings are and will remain sterile so long as the box is unopened. A list of contents is placed on the top of the first

tin lid, the final lid is placed on top, the two boxes are placed in the wooden Red Cross case and the lid nailed on. These boxes may be sent to the ends of the earth, the contents being in perfect condition as regards dryness and sterility so long as they are unopened; and surgeons at the base hospitals, or at the firing line, can depend on the dressings arriving in as perfect condition as if they came from the sterilizer to the operating room in the best hospitals.

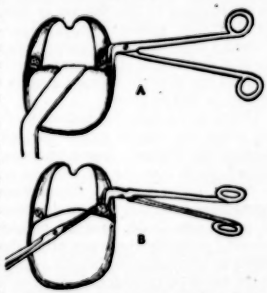
The majority of the guaranteed sterile dressings sent from Toronto have been sterilized and packed at the Toronto General Hospital under the conscientious supervision of Miss Gunn, the woman superintendent, and Miss Dunbar. The reports coming to us from abroad are that the dressings are a wonderful blessing to the surgeons and the wounded.

NEW INSTRUMENT AND TECHNIC FOR CIRCUMCISION OF THE TONSIL

FRANK G. MURPHY, M.D., MASON CITY, IOWA

In a previous article[1] attention has been called to a new operation for the relief of chronic tonsillar infection. This operation consists of the establishment of free drainage of the tonsillar and peritonsillar region, with subsequent atrophy of the tonsil, by separating the attachments around the tonsil instead of its enucleation. The method of procedure in this operation is as follows:

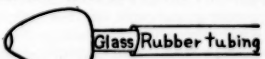
After the field of operation has been anesthetized, the forward blade of the scissors is inserted behind the plica between the anterior pillar and the tonsil, the incision being made as deep as possible, as at *A* in the illustration.



New instrument and technic for circumcision of the tonsil: *A*, incision; *B*, grasping of tonsil with forceps.

The tonsil is then grasped as at *B* with a pair of tonsil forceps. As gentle traction is being made with the forceps, any attachments which there may be to the posterior pillar are severed. Adhesions in the supratonsillar fossa are then cut. The anterior fossa is then dissected farther back so that the tonsil, when the operation is completed, is attached only to the pericapsular tissue.

Irrigating Tip.—Below is a drawing of an improvised urethral and bladder irrigating tip which has served me well. The tip is the hard rubber portion of a discarded stethoscope



or ear piece, into which is inserted a couple of inches of glass tubing, firmly held by the use of a little cement, and to which is attached the rubber tubing of the irrigator bottle.—J. A. VAN DER HULSE, M.D., Akron, Ohio.

1. Murphy, F. G.: Circumcision of the Tonsil, Jour. Iowa State Med. Soc., 1915, v, 328.

The Child and the State.—When the state, for its own protection, compels a child to go to school, it pledges itself not to injure itself by injuring the child.—Dr. William H. Allen.

Therapeutics

PNEUMONIA

(Continued from page 1461)

TREATMENT

4. *The Bowels.*—The bowels should move daily. Constipation should be prevented, but a diarrhea is not desirable. A cathartic may be given in the beginning of the disease, the one preferred by the physician. Later, his preferred laxative, whether a compound aloin tablet, a cascara tablet, or some other combination, should be given, but, preferably, it should be a vegetable laxative. An occasional enema of glycerin and water, one ounce of each, will be found valuable. It will empty the colon and prevent the necessity of giving large doses of a laxative or a cathartic. Such treatment will aid in preventing tympanites.

A diarrhea will weaken the patient and add one more element to cause weakness of the heart. If it occurs, the bowels should be cleaned out with a laxative, castor oil if it can be taken, and then movements should be prevented by $\frac{1}{10}$ grain of morphin. Saline cathartics are likely to increase the amount of gas in the intestine, and hence are generally contraindicated. Bismuth is likely to remain too long in the bowels and promote the growth of germs and the absorption of toxins, which will add one more danger in the pneumonia toxemia that is constantly feared. Phenyl salicylate (salol) in 0.25 gm. doses, in capsules, may be given in these diarrheal conditions, four or five times in twenty-four hours, for a few days, and will often stop excessive fermentation.

5. *Care of the Skin and Mouth.*—It is rare, with the proper diet, the proper treatment of the bowels, and with plenty of fresh air, that the temperature in pneumonia is so high as to require sponging with cold water. Even when the temperature is very high, with a cerebral complication, tepid sponging in a warm room is as severe treatment as should be tried. Ordinarily, then, sponging once or twice a day with hot water is advisable, both for the comfort of the patient and to remove perspiration and keep the skin active. The temperature is more or less reduced by the warm sponging, the blood-vessels of the surface are slightly dilated, the circulation is equalized, and the normal activities of the skin, which are essential, are increased. Also, warm sponging tends to relieve the tension of blood in the head, and many times aids in promoting sleep. If the patient's temperature is low, hot-water sponging is certainly advisable, and hot-water bags should be used around the extremities and even around the body. Such a condition is often seen in pneumonia in alcoholics. Profuse, cold, clammy perspiration should never be allowed to remain on the patient's body. Warm alcohol sponging in such conditions is advisable, that is, sponging with pure alcohol. A dash of alcohol in a basin of water has no therapeutic or physiologic value and represents nothing but a fad.

Cleanliness of the mouth, teeth and tonsils is very important. The patient may have infected himself from his own tonsils or his own gums; such possibilities should be remembered, as well as the necessity of keeping the mouth as clean as possible during the illness. While alkaline mouth washes are cleansing and soothing, acids are more likely to kill the mouth germs; hence not only are orange juice and lemonade advisa-

ble for the salts that they contain and for stimulating the secretions of the mouth, but they may even have a germicidal value. There is no reason why a patient should not chew pieces of orange. The pulp, if swallowed, is perfectly harmless, and adds some bulk for the intestines to act on. Suppurating spots in the mouth should be touched with tincture of iodin or with Lugol's solution. Hydrogen peroxid solutions may be used in full strength for swabbing, or diluted for a mouth wash or throat gargle.

The sputum, being as likely to communicate disease as is that from tuberculous patients, or even more so, should receive the same antiseptic care as does that of tuberculosis. The patient's mouth, excretions from the nose, and the nurse's hands and contaminated clothing or gauze should be treated in the manner so well understood in tuberculosis.

GENERAL CONSIDERATIONS

Although pneumonia has been considered a self-limited disease tending to recovery, this can hardly now be said to be generally true. The sthenic type of pneumonia which does tend to recovery, with one or more lobes distinctly involved, is now not so frequent as a less circumscribed pneumonia, or an asthenic type with a low temperature and without much tendency to self-limitation and, as the statistics show, not a great tendency to recovery. The crisis which should introduce recovery means, according to Hektoen,[1] the destruction of the pneumococci in the lungs and blood. This, he says, is accomplished by phagocytosis and by extracellular digestive processes. Therefore, the greatest defense against pneumonia is a production of leukocytosis and of antibodies in the blood. Such patients as rapidly die of a toxemia have this blood defense in insufficient amount. When this defensive process has been produced in sufficient amount to destroy the pneumococci rapidly, the recovery is by crisis; when it is in sufficient amount to destroy them only slowly, the recovery is by lysis, and this latter form of recovery is the one which we now more frequently see.

If the patient does not die of the acute onslaught of the germ by incombatable toxemia, or by exhaustion from a later general toxemia, or from a migration of the pneumococci to the meninges, his survival or death depends on the ability of his heart to withstand the disease. Willson[2] states that his postmortem findings have shown, in every fatal case of pneumonia, a coincident attack on the heart muscle and a more or less destructive myocarditis; he thinks it likely that "every heart that weathers the pneumonic storm sustains similar lesions, of milder degree perhaps, yet from which it never fully recovers." This finding emphasizes the part that the heart plays in the disease of pneumonia.

Rohdenburg and Vander Veer[3] believe that pneumococci are not infrequently present in the spinal fluid in pneumonia, even when there are no distinct meningeal symptoms. It is quite possible that a slow-going pneumococcic meningitis without distinct meningeal symptoms may be the cause of some deaths that have been attributed to toxemia, that is, deaths of patients that have insomnia, delirium and high temperature without more distinct meningeal symptoms.

It has been shown by Dochez and Gillespie[4] and confirmed by Dochez and Avery[5] that lobar pneumonia may be divided into four groups by immunologic tests on animals. These latter investigators do not believe that the virulent types of pneumococci are often found in the mouths of healthy persons who have not been directly exposed to pneumonia. The germs frequently found in the mouth belong to the fourth group of pneumococci, those of low virulence, which are, however, responsible for about one fifth of the cases of pneumonia. In patients who have the more virulent type of pneumococcus the disease will be prolonged if this virulent type is found long in the mouth of the patient. Generally, after a certain number of days the virulent type of pneumococcus has disappeared and perhaps is replaced by a nonvirulent type. On the other hand, these observers often found in the mouths of the assistants and nurses the virulent type of pneumococci which they had acquired from their patients. Such nurses and attendants are certainly active carriers of this infection, and may infect others even if they develop sufficient immune bodies from such vaccination, which it really is, to prevent the occurrence of the disease in themselves. Pneumonia, therefore, seems to be, in 80 per cent. of the cases, a contact disease. Consequently, the necessity of making it a reportable disease and surrounding each case with all the preventive care that is used in other contagions is self-evident.

There is no specific treatment for pneumonia; no one treatment can be guaranteed either to abort or to shorten the disease. Some years ago veratrum viride, pushed to its cardiac depressant action, was thought to be of great benefit. More recently lauded treatments have been large doses of quinin, of salicylic acid, of potassium iodid, and of quinin and urea hydrochlorid; probably there are other drugs that have been stated to be of marked benefit. The success from these drugs must be considered more or less accidental, and but few followers of these treatments have been able to obtain the success of their founders.

That occasionally pneumonia may be aborted must be acknowledged, as the pneumococcus is found in the mouth without pneumonia occurring; hence the germ may enter the respiratory tract, causing congestion, and still the disease might abort. Doubtless many supposed aborted cases, however, were congestions of the lung in which the pneumococcus was not present.

That venesection was at one period of considerable value in pneumonia when the disease was constantly sthenic, the patient was sturdy and had a surplus of respiratory strength, is doubtless true. This treatment has apparently at times saved life. Occasionally, in an overpowering onslaught of this infection, in a strong, plethoric man, with rapid congestion and consolidation of one or both lungs, venesection may be valuable today. Such cases are becoming more and more rare.

Venesection, veratrum viride, aconite, and large doses of the coal-tar products are all more or less in disrepute on account of the almost assured heart weakness that a patient with pneumonia will develop sooner or later. Consequently, the physician dislikes to think that he may have hastened this heart failure by his treatment. The trend of the treatment of severe acute

1. Hektoen, L.: THE JOURNAL A. M. A., Jan. 24, 1914, p. 254.
2. Willson, R. N.: THE JOURNAL A. M. A., Sept. 19, 1914, p. 981.
3. Rohdenburg, G. L., and Vander Veer, Jr., A.: THE JOURNAL A. M. A., April 10, 1915, p. 1227.
4. Dochez, A. R., and Gillespie, L. J.: THE JOURNAL A. M. A., Sept. 6, 1913, p. 727.
5. Dochez, A. R., and Avery, O. T.: Jour. Exper. Med., 1915, xxi, 146.

disease is the trend of civilization. The dire blood lettings, profuse vomitings, severe catharsis, then the cardiac depressants, then the coal-tar antipyretics, then the starvation, and lastly the use of alcohol to depression have all given way to the change in humanity due to civilization. The strenuous life that we lead has caused the heart and circulation to be less and less able to withstand disease and less and less able to stand severe radical treatment. Consequently, harsh methods tend to prostration and a fatal outcome in pneumonia. Conservation of energy is now the watchword in this disease.

(To be continued)

DOSAGE OF CALOMEL

Dr. Nathan B. Eddy, Standish, N. Y., writes:

In THE JOURNAL (Oct. 2, 1915, p. 1183) in the department of Therapeutics under the heading, "Acute Diarrhea," it is said, "This foolish one-tenth-grain-dose-of-calomel-every-hour fad should be given a decent burial." Allow me to object.

We have just been having here a considerable number of cases of acute diarrhea, apparently due to the defective water supply. The same general treatment was used as outlined in the article in question, except that calomel was given in divided doses, one-tenth grain in children, one-quarter grain in adults, usually at half-hour to one-hour intervals.

The apparent result was that less calomel was needed for the desired effect, and, perhaps more important, where vomiting was present, the divided doses were better retained than larger single doses. Single doses were used in some cases.

It seems to me there is still a place for divided doses of calomel, the article to the contrary.

There is probably no doubt that in selected cases divided doses of calomel may act satisfactorily, but it is rare that divided doses will act better than a single dose in amount carefully selected to fit the case. The criticism concerning the small-dose-of-calomel fad was aimed at the great frequency with which calomel is thus administered in hospitals in postoperative cases, without regard to the condition of the stomach or intestines, and to all young children who need a cathartic or have any disturbance whatever, and to most adults who have some intestinal disturbance. A frequent consequence of the administration of small doses of calomel, especially in postoperative cases, is nausea, vomiting, and also many times an irritation of the duodenum which lasts several days.

It takes many hours for calomel to cause purging. When it is time for the first two or three doses to cause such action, many other doses on the one-tenth-grain plan are on the way. If protracted looseness of the bowels is desired, this may be good treatment. On the other hand, even though it cannot be denied that calomel in small doses frequently repeated has a certain amount of antiseptic or germicidal action in the intestine, as is claimed, it still would seem that some other antiseptic, as phenyl salicylate (salol), would be better and safer.

The success of small doses of calomel recorded by the correspondent is not questioned. It is still urged, however, that such treatment can do harm, and it is to be deplored that calomel in divided doses is given thoughtlessly and as routine treatment without individualizing the patient and the object of treatment.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED BY THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION. THEIR ACCEPTANCE HAS BEEN BASED LARGELY ON EVIDENCE SUPPLIED BY THE MANUFACTURER OR HIS AGENT AND IN PART ON INVESTIGATION MADE BY OR UNDER THE DIRECTION OF THE COUNCIL. CRITICISMS AND CORRECTIONS ARE ASKED FOR TO AID IN THE REVISION OF THE MATTER BEFORE PUBLICATION IN THE BOOK "NEW AND NONOFFICIAL REMEDIES."

THE COUNCIL DESIRES PHYSICIANS TO UNDERSTAND THAT THE ACCEPTANCE OF AN ARTICLE DOES NOT NECESSARILY MEAN A RECOMMENDATION, BUT THAT, SO FAR AS KNOWN, IT COMPLIES WITH THE RULES ADOPTED BY THE COUNCIL.

W. A. PUCKNER, SECRETARY.

BETANAPHTHYL SALICYLATE. — Betanaphtholis Salicylas. — Betan. — $C_{10}H_7OH.CO.O.(C_6H_4)$. — The salicylic acid ester of betanaphthol.

Actions and Uses.—Betanaphthyl salicylate undergoes no change in the stomach, but is split up into its original compounds when it reaches the intestinal tract by the pancreatic juice and intestinal secretions. It is believed to act as an intestinal antiseptic and, being excreted in the urine, to act in a similar way in the bladder. (See general article on Naphthol Compounds, N. N. R., 1915, p. 210.)

It has the antirheumatic properties of salicylic acid. It is said to be useful in intestinal fermentations, catarrh of the bladder, particularly gonorrheal cystitis, rheumatism, etc.

Dosage.—From 0.3 to 0.5 Gm. (4 to 8 grains) in cachets, milk or emulsion.

Non-proprietary preparation: Betanaphthyl Salicylate, M. C. W.—Manufactured by the Mallinckrodt Chemical Works, St. Louis, Mo.

Betanaphthyl salicylate is obtained by heating betanaphthyl-sodium and sodium salicylate with phosphorus oxychloride at from 120 to 130 C.

It is a white, shining crystalline powder, colorless and tasteless, melting at 93.2 C. It is insoluble in cold or hot water or glycerin, soluble with difficulty in cold alcohol or turpentine, easily soluble in boiling alcohol, in ether, in benzene, and in warm linseed oil. In the cold it is not changed by acids or alkalies of moderate concentration. When heated with alkalies it is decomposed into its constituents, which, if the solution be acidulated, will crystallize.

It is distinguished from salol by its higher melting-point and by the production of a brownish-green color, when a trace of nitric acid is added to its yellow colored solution in pure sulphuric acid. It burns on platinum foil, leaving no residue (absence of fixed mineral impurities). If 1 Gm. of betanaphthyl salicylate be shaken with 30 Gm. of boiling water and filtered through a moistened filter, the filtrate should not have an acid reaction (absence of salicylic, hydrochloric or phosphoric acid), nor should it after cooling show a crystalline deposit (salicylic acid or betanaphthol); nor should it become turbid on the addition of silver nitrate (chlorides or phosphates) or barium nitrate (absence of sulphate), nor should it give a violet color with solution of ferric chloride.

Proprietary Preparation:

BETOL.—A name applied to betanaphthyl salicylate.
Manufactured by Merck and Co., New York.

Classification of Tropical Diseases

Escomel publishes in the *Cronica Medica*, 1915, xxxii, 150, a study of blastomycosis in man in Peru and Bolivia. It is accompanied by eight illustrations of two typical cases, and he declares that there is unwarranted confusion in the nomenclature of tropical diseases, especially in Peru and Bolivia. Cases have been grouped as uta, espundia, buba, etc., when in reality all these tropical diseases of the skin and mucous membranes should be classified as leishmaniasis, with or without flagellates, syphilis, tuberculosis, pain, or blastomycosis, "the latter constituting," he remarks, "the most extensive and the cruellest chapter of pathology in our tropical region." The dictionaries define blastomycosis as saccharomycosis, that is, any disease condition due to a yeast-fungus. In his two cases the skin around the mouth and the mucosa of the upper air passages were mainly affected.

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SATURDAY, OCTOBER 30, 1915

THE ANTIFERMENTS OF THE BLOOD

The Abderhalden test for the presence of specific enzymes in the blood, which has frequently been referred to,[1] has awakened interest not only in the possibilities of practical application which it represents but also in its relation to the underlying principles of immunity. Even a cursory review of the literature of the subject will indicate that Abderhalden's views have not gone unchallenged and his contentions have not remained without contradiction. The differences have ranged from the complete denial of the phenomena themselves to the mere expression of doubt as to the validity of their interpretation.

It will be recalled that according to Abderhalden the injection of foreign proteins of any kind into the blood leads to the prompt formation and appearance in the blood of enzymes which can digest proteins of the sort introduced, but not any other kinds. In the case of pregnancy, for example, it is postulated that placental protein finds its way into the maternal circulation. As a result, the blood serum of the pregnant woman or other mammal acquires the property of digesting proteins prepared from placental tissues. This fact has been applied to the detection of pregnancy. In a similar way a comparable serum test for the detection of cancer has been devised with protein derived from carcinomatous tissue. The underlying postulate in all these cases is that the body can generate new enzymes which will attack only certain native proteins.

Jobling[2] and his collaborators at the Vanderbilt University, Medical Department, in Nashville are among those who take exception to this assumption of the genesis of specific enzymes, and they seek to explain the phenomena in a quite different manner. It is known that the blood may contain not only proteolytic enzymes but also antienzymes. Protein-digesting ferments are frequently liberated from cells such as the white corpuscles of the blood, but their digestive capacity is inhibited by the presence of antiferments in the blood. Proteolytic enzymes are present in the blood under a variety of conditions, but they are not specific and they become evident only when the antienzyme has been removed. According to Jobling and others, normal human serum rarely contains strong proteolytic enzymes and therefore does not give a positive Abderhalden reaction. On the other hand, serums of pregnant women, of patients with pneumonia, or with cachexia due to certain causes do contain ferments and will give positive Abderhalden reactions. Such tests can be obtained with all human serums containing much proteolytic ferment, regardless of the disease from which the patient is suffering, not only with placental tissue but also by removal of the antitrypsin by suitable methods. In the case of the pregnancy test a positive reaction is due to the adsorption of the antienzyme by the placental tissue used or by the bacteria. The enzyme is merely permitted thus to act on the unprotected serum protein. The digestive reaction, as several investigators have insisted, is exerted, in all cases of positive test, on the serum itself, rather than on the foreign substance added.

Extensive investigations have shown that a variety of ether-soluble substances or products derived from them can act as ferment-inhibiting agents. This is particularly true of soaps of some of the fatty acids. Jobling and Petersen[3] have shown that they can be prepared from the tubercle bacilli and tuberculous caseous material. They suggest that the production of the latter in tuberculosis must be partly due to the presence of substances which inhibit the action of the enzymes set free as a result of the disintegration of the cells. Further experiments have shown that it is the fatty acids of the unsaturated type which are endowed with the antitryptic power. In caseous material from tuberculous lymph glands and from caseous pneumonia, ferment-inhibiting substances were also identified as compounds of unsaturated fatty acids.

The association of the unsaturated carbon bonds with the antitryptic power has been made even more likely by the fact that treatment with iodin or hydrogen peroxid, which changes the desaturation of the fatty acids, also destroys their antiferment activity. Jobling and Petersen relate these facts to the action of iodid in tuberculosis. Caseous areas often may be present in the lung, but unless they open into the air passages, tubercle bacilli may be absent from the sputum. If iodids are now given, the antiferments are destroyed, proteolysis can proceed, and the caseous matter begins to soften and is more likely to rupture into the bronchi so that bacilli are then discharged with the sputum.

With the establishment of the contention that the activity of fatty acid derivatives (soaps) as ferment-inhibiting agents is dependent on the degree of unsatu-

1. **A Biologic Diagnosis of Pregnancy, editorial,** The Journal A. M. A. May 25, 1912, p. 1604; The Blood Test for Pregnancy, Dec. 7, 1912, p. 2073; The Present Status of Abderhalden's Serodiagnosis, Aug. 16, 1913, p. 493; Abderhalden's Test in Cancer, Oct. 18, 1913, p. 1461.

2. Jobling, J. W., and Petersen, W. F.: A Study of the Ferments and Antiferments of the Body and Their Relation to Certain Diseases, Bull. Johns Hopkins Hosp., 1915, xxvi, 356.

3. Jobling, J. W., and Petersen, W.: Jour. Exper. Med., 1914, xix, 239 ff.

ration and "iodin value" of their fatty acids, has come the attempt to discover whether all antitryptic agencies in the body are of this lipoidal character. It is now known that the antitryptic power of serum is almost entirely removed by extraction with an organic solvent such as chloroform or ether. Furthermore, serums become far more toxic when their antifermentative potency is thus destroyed, perhaps because the enzymes in them are then given full scope to produce poisonous digestion products from the unprotected serum proteins. Applications of the principle involved to other problems in immunology will suggest themselves.

CAMPHOR, NATURAL AND SYNTHETIC

It is reported that the first, and, so far, the only productive camphor plantation in the United States (that at Satsuma, Florida) distilled its second year's crop this spring.[1] The yield is said to be satisfactory. Smaller plantations in various parts of Florida will soon come into bearing. This is the result of a government campaign begun twelve years or so ago. It is expected that more and more land will be set out in camphor, and that this country may soon (perhaps within a decade) be independent of foreign camphor producers.

Before the camphor monopoly becomes a page of forgotten history, some writer with an eye for the romance of actuality should record its life-and-death struggle against the synthetic camphor industry. The camphor of commerce is now obtained chiefly from Japan and the island of Formosa, to both of which regions the camphor laurel (*Cinnamomum camphora*) is indigenous. After taking possession of Formosa, Japan gradually brought under control the fierce head-hunting tribes that had previously made camphor gathering almost impossible there, and in 1899 made the industry a government monopoly, which in 1903 was extended to Japanese camphor. The Japanese captured the world's camphor market, reaping, it is said, huge profits, which reached their climax in 1906-1907, when camphor brought as high as $80 per picul of 130 pounds.[2] Meanwhile, a rival industry was growing up in Germany. In 1870 it became known that synthetic camphor could be manufactured from oil of turpentine. This was converted: (1) into pinene hydrochlorid; (2) into camphene; (3) into isoborneol, and (4) into camphor.[3] In 1905, the growing importance of camphor in the production of celluloid and other substances stimulated the first important attempt to produce synthetic camphor for the market. The idea captivated the imagination of chemists, and the production of synthetic camphor became one of those crazes which blast hopes and wreck fortunes. Over two hundred patents were taken out; by 1908 the synthetic camphor industry, favored by temporary business conditions, was able to deal a serious blow at the Japanese natural camphor trade. The Japanese rallied, however, and, by underselling wherever their trade was threatened, regained control of the market. In 1909 the German synthetic camphor industry, though not killed, was so crippled (being also hampered by the fluctuations in the supply of turpentine oil) as no longer to endanger Japanese supremacy.[4] On account of our plentiful supply of turpentine oil, the manufacture of synthetic camphor has been regarded as a promising field for enterprise in this country. American turpentine oil ranks next after the French as a base for synthetic camphor, in the opinion of German manufacturers.

The chemical formula for natural and synthetic camphor is the same, $C_{10}H_{16}O$. The two substances are best distinguished by the polarized light test. Natural camphor from the camphor laurel[5] rotates polarized light to the right, whereas synthetic camphor, which is composed of dextrorotatory and levorotatory camphor, is optically inactive. This opposite rotation in two bodies identical in the number and kinds of atoms in the molecule is supposed to indicate a reverse arrangement of atoms or atomic groups, so that the two isomers correspond to each other like the right and left of a pair of gloves. In many instances this reverse structure is accompanied by an as yet inexplicable difference in medicinal activity. Thus, when synthetic epinephrin was first placed on the market, it was found to have but half the clinical activity of natural epinephrin. Natural epinephrin is levorotatory; the synthetic product then marketed was optically inactive, being a mixture of dextrorotatory (*d*) and levorotatory (*l*) epinephrin. When their attention was called to the differences between natural and synthetic epinephrin, the manufacturers of the latter were able to produce a satisfactory article by separating out and discarding the *d*-substance, which was only one fifteenth as powerful as the *l*-product in its effects on the blood pressure.

A similar gradation in the effects of levorotatory, inactive and dextrorotatory camphor has been reported,[6] *l*-camphor in massive doses strongly stimulating the central nervous system of frogs, the optically inactive (synthetic) camphor producing a less marked

1. Our Beginnings in Camphor, Scient. Am., Jan. 16, 1915, p. 71.
2. Camphor Industry in Foreign Countries, Dept. Comm. and Labor, Bur. Man., Spec. Cons. Rep., 1910, xliii, Part III.
3. Thorpe's Dictionary of Applied Chemistry, Vol. I, art. Camphors, p. 619.
4. Report for 1909 of the Elder Merchants of Berlin, quoted in Camphor Industry in Foreign Countries (Note 2).
5. A natural camphor is known which, though otherwise identical with ordinary camphor, rotates polarized light to the left. This *l*-camphor occurs in the volatile oil of feverfew (*Pyrethrum parthenium*) and in the oil obtained from the fresh twigs and leaves of *Artemisia nana*. (Thorpe's Dictionary of Applied Chemistry, Vol. I, art. Camphors, p. 620.)
6. Langgaard, A., and Maass, T. A.: Therap. Monatsh., November, 1907, p. 573, quoted by Bachem, C.: Med. Klin., April 11, 1915, p. 425. Sassen (Inaug. Diss., Bern, 1909, also quoted by Bachem) was unable to confirm these observations. Langgaard and Maass found but slight differences in the effects of the different forms of camphor given in moderate doses; all the effects produced were on poisoned animals. Grove (Jour. Pharmacol. and Exper. Therap., January, 1910, p. 445), in experiments on frogs and white rats, found that the pharmacologic action of the three kinds of camphor differed not in kind, but merely in degree. Mammals were about three times as susceptible as frogs to the action of all forms of camphor.

reaction, and the *d*-camphor (the natural product) a still weaker one. The *l*-camphor is said to be more toxic than *d*-camphor.[7] The present war, by cutting off from Germany the supply of Japanese camphor, has naturally stimulated among German clinicians an interest in the possibility of substituting artificial for natural camphor in medicinal use. The government therefore recently ordered clinical tests made. Synthetic camphor, used externally and in moderate doses internally, has been reported as having the same effects as natural camphor.[8] The published clinical reports, however, are few and the details are somewhat meager. The announcement of a manufacturer that synthetic camphor has been fully established as equal in medicinal value to natural camphor therefore appears premature. The substitution of synthetic camphor for the natural product in medicinal use seems unwarranted where no necessity exists, at any rate, until the discrepancies in the evidence have been cleared up. Even Levy and Wolff,[8] who report having found the former a satisfactory substitute for the latter product, warn against using more than 1 gm. in a single dose, on account of the greater toxicity of the artificial substance.

The pharmacologic evidence with regard to camphor is confused and contradictory, and the clinical evidence is naturally still more so. On the subject of the clinical value of natural camphor there are many diametrically opposed opinions. While in Europe camphor is widely used for its circulatory actions, especially in threatened cardiac failure, certain English and American observers[9] have been unable to detect any action from camphor which would justify reliance on it as a cardiac stimulant. Further observations are much to be desired.

THE MANAGEMENT OF DIABETES

Last week's issue of THE JOURNAL[10] contained a brief historical survey of the purpose which has permeated some of the methods of dietotherapy in diabetes, particularly those which have involved the use of considerable amounts of carbohydrate-containing foods. As is so often the case in medicine, the intent of some of these procedures has been either misunderstood or not taken into consideration at all by those who have attempted to apply them to the human patient, and the results have frequently been unexpected failures. Many physicians have inaugurated the "oatmeal" treatment in the regimen of a diabetic without appreciating that its field of usefulness is admittedly limited, and that it represents, not a permanent sort of dietary, but a vigorously and intelligently instituted temporary mode of therapy intended to develop an increase of carbohydrate tolerance and to diminish a severe impending acidosis and ketonuria. None of the "cereal treatments" were originally intended to be permanent unvaried dietary procedures. A careful study of the recommendations of those who proposed them would have dispelled the false claims and irrational practices.

The warning to insist on an intelligent appreciation of the aim and method alike of any new procedure in therapy may not be amiss in relation to the treatment of diabetes by prolonged fasting—a method advocated by Dr. F. M. Allen,[11] now of the Rockefeller Institute of Medical Research. It is the more timely because a fundamental factor in the new plan consists in a larger share of education for the patient and a smaller element of nursing or hospital life.

A competent American student of diabetes has succinctly summarized the intent of the new procedure as follows: Fasting and a low diet have long been known, but it is only fair to give Allen the credit, first, of seeing the therapeutic significance of inanition in a severe case of diabetes; second, of proving on diabetic dogs that prolonged fasting would render them sugar-free, and, third, of having the courage of his convictions and applying this principle to human diabetics.[12] The ideal of treatment in this disease is a sugar-free and acid-free urine. Present experience indicates that the glucosuria in cases of even the severest type of diabetes may with advantage be cleared up by one initial fast. The necessary duration may sometimes be as long as eight or ten days. Under these conditions, contrary to the general impression, the severe acidosis of diabetes is markedly reduced. Allen has expressed the situation by saying that, broadly speaking, freedom from glucosuria seems attainable in all cases of uncomplicated human diabetes before there is danger of death from starvation.

Heretofore the fasting in cases of diabetes has been of brief duration. The loss of body weight has usually been feared as a dangerous depletion of reserve energy; and in the presence of severe acidosis, carbohydrates, though poorly tolerated, have been depended on to bring relief from this condition. In the milder types of diabetes the usual measures used in diabetic therapy, namely, restriction of carbohydrate or protein and brief fasting, if necessary, suffice to keep the

7. Pari (Sull' azione fisiologica delle canfore isomere, Gazz. d. osp., March 15, 1908; quoted by Levy and Wolff, Note 8) found *l*-camphor thirteen times as toxic as *d*-camphor. Grove (Note 6) found dextrocamphor three-fourths as toxic for frogs as the levo form, while the inactive camphor occupied a middle position.

8. Levy, Margarete, and Wolff, Walter: Camphertherapie mit künstlichem Campher, Therap. d. Gegenw., March, 1915, p. 88. Kaufmann, R.: Zur Anwendung des synthetischen Kampfers in der Dermatologie, München. med. Wchnschr., March 2, 1915, p. 319.

9. See, for instance, Heard and Brooks (Am. Jour., Med. Sc., February, 1913, p. 238), who in clinical trials failed to obtain any effect from doses as large as 30 grains injected subcutaneously in oil.

10. Dietotherapy in Diabetes, editorial THE JOURNAL A. M. A., Oct. 23, 1915, p. 1463.

11. Allen, F. M.: Studies Concerning Diabetes, THE JOURNAL A. M. A., Sept. 12, 1914, p. 939; Boston Med. and Surg. Jour., Feb. 18, 1915; Prolonged Fasting in Diabetes, Am. Jour. Med. Sc., 1915, cl, 480. Joslin, E. P.: Present-Day Treatment and Prognosis in Diabetes, ibid., p. 485. Hill, L. W., and Eckman, Rena S.: The Starvation Treatment of Diabetes, with a Series of Graduated Diets as Used at the Massachusetts General Hospital, Boston, W. M. Leonard, 1915.

12. Joslin, E. P.: Present-Day Treatment and Prognosis in Diabetes, Am. Jour. Med. Sc., 1915, cl, 485.

patients sugar-free and in good condition. Such measures notably fail in the severer types. The fundamental significance of Allen's treatment, involving a suitable initial fast, lies in the belief that if glucosuria and hyperglycemia are prevented, the damaged internal function of the pancreas, on which the utilization of sugar ultimately depends, is protected, and rest becomes possible. Structural losses cannot be repaired; but it is reasonable to assume that if there is a "functional" element in the etiology of human diabetes, a complete rest of the weakened function may both permit and facilitate recovery.

The policy of Allen's method involves "prompt and lasting freedom from glucosuria and acidosis" not only in mild and incipient cases but also in all diabetic patients, even the severest. This represents a far more radical treatment than any hitherto proposed. The avoidance of acidosis means the elimination of the necessity of administration of objectionable alkalies often given in very large doses. The danger of coma is correspondingly reduced. The subsequent carefully selected diet is intended to maintain the advantage of freedom from intoxication at any cost. Therefore, instead of attempting to increase the weight of the somewhat depleted patient and maintain it at the highest possible level, as has so often been attempted, the aim is to keep the weight low in the belief that the reduction is beneficial to the diabetic. Any gain which brings back glucosuria or ketonuria must be checked. From this point of view, it becomes necessary on the return to restricted diet to test the patient's tolerance not only to carbohydrate but equally well to fat and protein, and to keep within it. During the fasting periods, alcohol may be given until the ketonuria disappears. This is not absolutely essential, though alcohol appears to be valuable and does not produce glucosuria.

Although it is perhaps too early to grow unduly enthusiastic with respect to the success of the treatment by initial fasting, enough favorable reports have been recorded to designate the outlook as one of promise. Dangerously weak and emaciated patients have borne the fasting with apparent benefit, "giving the impression that they have been suffering more from intoxication than from lack of nutrition." Many of the dangers which suggested themselves have not arisen or have been successfully managed by those who have tested the method. After all, under any dietary plan the most important feature is to educate the patient so that he can carry out a dietary scheme with intelligence. Until the physician himself knows foods as well as he knows drugs, it is useless to expect dependable results from those in his care. Too often he is hopelessly bewildered when there is need of suggesting a "diet list." Green corn and celery, bananas and cucumbers are all in the same vegetable category in his mind. A radical treatment which removes polydipsia, secures relief from polyphagia and makes the patient feel better is always welcomed by the individual; but the treatment cannot be expected to succeed unless it can be intelligently prescribed.

Aside from the advantages of comfort and simplicity, the ultimate prognosis of diabetes on the basis of the new treatment must depend on the question whether diabetes is an inherently progressive disease or "the simple weakness of a metabolic function." Rest and restoration may succeed in one case; repair may fail in the other. Joslin has come to feel that coma no longer represents the culmination of diabetes, but that it is an avoidable accident. Whatever the ultimate outcome, Allen's treatment is believed, in his own words, to remove the glucosuria and acidosis more quickly and surely than has been the practice heretofore, and to enable patients to do better when these symptoms are removed than when they are allowed to continue. Any plan which holds out prospects like these for severe diabetes deserves to be studied carefully, to say the least.

LUMBAR PUNCTURE IN DELIRIUM TREMENS

The belief is becoming more or less general that the final factor in the production of delirium tremens is a marked increase in the pressure of the spinal fluid. Schottmüller and Schumm[1] found a marked elevation in the pressure of this fluid in 80 per cent. of the cases of acute alcoholism examined by them, and in one instance they drew as much as 100 c.c. with no unfavorable reaction. Steinebach[2] found a similar condition in 75 per cent. of patients with alcoholic delirium, and in the remainder there was a relative increase in the pressure of the fluid. That this increased pressure may be responsible for the delirium and is not merely a condition which accompanies chronic alcoholism is indicated by the fact that increased pressure is not found in alcoholics before or after an attack of delirium tremens, nor do habitual drinkers who are not suffering from acute alcoholism or who have not had delirium show an increased pressure. Further, in animals killed during a state of acute alcoholism, Braun[3] has demonstrated an internal hydrocephalus and an inflammatory infiltration of the pia. Finkelnburg[4] found, in dogs which had been given from 2.3 to 3.3 c.c. of alcohol per kilogram of weight, a maximum increase in the spinal fluid pressure of 72 per cent. This increase began from twenty to thirty minutes after the animal became intoxicated, reached its greatest height in from one and one half

1. Schottmüller and Schumm: Nachweis von Alkohol in der Spinalflüssigkeit, Neurol. Centralbl., 1912, xxxi, 1020.

2. Steinebach, R.: Ueber die Zerebrospinalflüssigkeit and über die Wirkung der Lumbalpunktion beim Delirium potatorum, Deutsch. med. Wchnschr., 1913, xli, 369; abstr., THE JOURNAL A. M. A., May 8, 1915, p. 1620.

3. Braun, cited by Bumke: Die exogenen Vergiftungen des Nervensystems, Handbuch der Neurologie von Lewandowsky, 1912, iii.

4. Finkelnburg: Experimentelle Untersuchung über den Einfluss des Alkohols auf den Hirn-Rückenmarksdruck, Deutsch. Arch. f. klin. Med., 1904, lxxx, 130.

to three hours, and remained high for several hours. He believes that similar conditions obtain in acute alcoholism in man, and that the headache, hyperesthesia of the skin, dizziness and other nervous phenomena following a debauch are due to this increased pressure and to the internal hydrocephalus which accompanies it.

If delirium tremens is due to increased pressure, the lowering of the tension by lumbar puncture should cause an improvement in the patient's condition. In this regard Steinebach's results are to the point. In every case the delirium grew milder; frequently it ended entirely. The disorientation as to time and place usually remained for a while. In two instances the delirium returned. Following a second puncture, an increase in the pressure was again found and the delirium soon abated. In the total series of eighteen cases, the average duration of muscular unrest following lumbar puncture was from three to four hours, and of delirium, twenty-four hours. In thirty-three cases in which lumbar puncture was not done, the average of the restless days was four, and of the delirium, five days. Thus, through lumbar puncture the duration of delirium was shortened 60 per cent. and the restlessness 75 per cent. This series of cases was punctured during the first twenty-four hours of delirium. Of the cases that were punctured on the second day following the onset of the delirium, improvement occurred less rapidly. Here the average duration of restlessness was from six to seven hours, of mental confusion twenty-four hours, and of delirium, eighty hours.

The manner of action of lumbar puncture in delirium tremens has been thought to be the same as that described by Quincke for puncture in acute serous meningitis. If the interventricular pressure reaches a certain point, the usual channels of escape for the spinal fluid become occluded. Then, by lumbar puncture, the hypertension is released and healing begins. Certain facts, however, make another explanation necessary. First, lumbar puncture works equally well in cases which show only a relative increase in pressure. Second, Steinebach found that after the withdrawal of the spinal fluid in these cases, the reinjection of from 15 to 20 c.c. of physiologic salt solution gave even more beneficial results. These facts indicate that there is probably some toxic irritant present in the spinal fluid. Accepting this view, the best treatment of delirium tremens is a spinal puncture which releases the pressure and removes part of the toxic substance and a dilution of what remains by the injection of salt solution.

The nature of this toxic substance is not known. In approximately 80 per cent. of these studied cases, alcohol or one of its derivatives has been demonstrated in the spinal fluid by the iodoform crystal test. Finkelnburg has shown experimentally that alcohol reaches a higher concentration and remains for a longer time in the spinal fluid than in the blood. While this may play a rôle in the increased pressure associated with acute alcoholism, it does not in the production of delirium, because delirium frequently begins during a period of total abstinence, and in such cases no alcohol can be demonstrated in the spinal fluid. Alcohol is apparently one of the substances which has an affinity for nervous tissues. It is secreted by the choroid plexus into the cerebrospinal fluid, but its presence there is a result of large amounts of alcohol recently consumed and is not the final factor in the production of delirium.

The most important therapeutic effect of lumbar puncture in delirium is stopping restlessness and muscular exertion, since that minimizes the chances of cardiac failure. The best results seem to occur in pneumonia when early puncture is made, and here a sparing of exertion is, of course, essential.

THE KIDNEY AND SUGAR EXCRETION

The average normal sugar content of the blood may be expressed, in round numbers, as 0.1 per cent. of glucose. Although the kidney cells are continually bathed with a sugar solution of this concentration, none of the carbohydrate passes them so as to reach the urine. There are other substances which may enter the blood stream in minutest doses — in quantities far smaller than those represented by the circulating sugar — yet they promptly make their appearance in the kidney secretion. As soon as the glucose concentration in the blood is slightly raised to the point commonly designated as hyperglycemia, sugar is likely to appear in the urine. Here is a group of undoubted facts that are not easy to explain. If all readily diffusible substances that find their way into the circulation could be found in the renal secretion, as various inorganic salts and urea are, this feature would be easy of interpretation. If it could be demonstrated convincingly that certain substances fail ordinarily to get into the urine because the renal cells are impermeable to them as they seem to be for colloids like the proteins, this, too, could readily be understood. But the so-called threshold phenomenon — the fact that glucosuria is dependent on a more or less pronounced rise in the concentration of a substance ordinarily present in the blood at all times — has been a stumbling block for a diversity of physiologic hypotheses.

One of the first contributions from the newly equipped James Buchanan Brady Urological Institute of the Johns Hopkins University and Hospital[1] offers an explanation of the problem in what appears to be a tenable and demonstrable form. The authors, Peirce and Keith, remind us of two unquestioned facts,

1. Peirce, G., and Keith, A. M.: The Excretion of Sugars by the Kidney, Proc. Soc. Exper. Biol. and Med., 1915, xii, 210.

namely, that the kidney uses a relatively large amount of oxygen, and that glucose is one of the main sources of energy in the body. It is therefore very probable, they argue, that the kidney normally oxidizes a certain amount of glucose. Hence, even if the boundaries of the renal cells are permeable for this sugar, not all of the glucose that penetrates into the cell will reach the lumen of the glomerulus or kidney tubule. The assumption is accordingly made that sugar normally gains entrance into the kidney cells in proportion to its concentration in the blood. There is no contention that the cell boundaries are in any way impermeable or permeable with difficulty to sugar. During its passage through the cell, some of the glucose is oxidized, as we might expect, and if not too much has entered, it will be oxidized in its entirety and none will appear in the urine.

Are there any facts in corroboration of this hypothesis? We may cite a few instances contributed by Peirce and Keith: The hourly oxygen requirement of the kidneys has been determined approximately by physiologists. It is found to be of a sufficient magnitude to produce complete oxidation of all the sugar which the kidneys might be expected to excrete if they were completely permeable to sugar. Again, if the kidney cells are actually permeable to sugar, which they in turn burn up, then the sugar content of the renal vein should be lower than that of the arterial blood entering the kidney. This, likewise, is found to be true. Finally, Peirce and Keith are finding that only the sugars which are oxidized by the body will show the so-called threshold phenomenon. They venture the added statement that if the kidney is permeable for a sugar when and only when its concentration in the blood rises beyond a certain level, that sugar is oxidized by the kidney. Carried to its logical consequence, this may be interpreted to mean that any substance which finds its way through the kidneys into the urine, only when its concentration in the blood rises above a certain level, belongs to compounds metabolized by the renal tissue. We shall await further demonstration.

The Autonomic System.—In the average healthy individual there is maintained an equilibrium between these two systems, the autonomic and sympathetic, subject to all the physiologic variations and physical needs of the body. This balance is kept up through the constant stream of stimuli arriving by the nerve paths and also by the direct chemical actions on the system, of hormones from the internal glands, or elsewhere. The points of possible intervention are so innumerable and the variety of stimuli is so great that it seems hopeless ever to be able always to diagnose accurately either the point or nature of the intervention. In marked variations from the normal, one finds many cases which show a pronounced tendency to an over or under action of one or the other system; and by keeping in mind the symptoms of hypertonus or hypotonus of the sympathetic or the autonomic system one finds many individuals who may be classed either as having a vagotonic or autonomic constitution or a sympathicotonic constitution.—J. W. McIntosh, M.D., *Canad. Med. Assn. Jour.*, September, 1915.

Current Comment

OSTEOPATHS AND THE HARRISON LAW

As anticipated, the federal government is having much difficulty in the administration of the Harrison law, owing to the fact that there is no uniform standard as to what constitutes the practice of medicine in the different states. Not only the definitions and provisions of the statutes, but also the decisions of various courts of last resort differ widely on this point. In some states, osteopathy is included in the practice of medicine; in other states, it is legally distinct. The dilemma of the Treasury Department is apparent from its conflicting rulings. Treasury Decision 2232, recently issued, revokes Treasury Decision 2172 and substitutes the following ruling: "Osteopaths should be permitted to register and pay special tax under the provisions of the act of Dec. 17, 1914, provided they are registered as physicians or practitioners under the laws of the state and affidavit is made in application for registration on Form 678 as required by Treasury Decision 2215 of June 10, 1915." This form is the one used by all physicians, and contains a statement sworn to by the applicant that he is practicing medicine at the time of making application. The intent of the Treasury Department in this ruling is obvious. If the ruling had provided for the registration of osteopaths in those states in which they are legally recognized as physicians, there would be no ground for criticism. The inclusion of the term "or practitioners," however, leaves the entire question open to argument. What does the Treasury Department mean by "a practitioner?" This might include Christian Scientists, clairvoyants, seventh sons of seventh sons, and every other fad or form of quackery. But the decision is of slight importance, after all. Suppose osteopaths are allowed to register under the Harrison law. What of it? Such registration will not give them the right to practice medicine, unless they are given this right by the law of the state. Registration under the Harrison law will not confer any right to practice medicine not given by the statutes of the state.

THE DISCOVERY OF ETHER ANESTHESIA

In a recent review of the controversy over the priority of the discovery of ether for anesthetic purposes, Dr. Allen J. Smith[1] has presented, in facsimile, the documentary evidence bearing on Dr. Crawford W. Long's work. Altogether there are eleven pages of photographic reproductions of letters and attestations of various kinds, including particularly the page from Dr. Long's account with James Venable, a patient who permitted Dr. Long, March 30, 1842, to administer ether to him. This was done with the understanding that when Venable had become unconscious, the surgeon was to remove one of two small tumors (wens) on the back of his neck, which, because of apprehension of pain, he had declined to have removed previously. There was the further understanding that if the first tumor was removed without pain under ether

1. Smith, Allen J.: Old Penn, Oct. 2, 1915.

anesthesia, then the surgeon was to remove the second. June 6, accordingly, the second operation was performed, permission to do it serving as a demonstration of the success of the first operation. The patient was charged $2 each for "extracting the tumor" and 25 cents each time for the ether. This item from Dr. Long's account book is certified under the hand and seal of P. F. Hinton, the clerk of the Superior Court of Jackson County, Ga., as being "a correct copy of an original entry made in his book for medical services for the year 1842 by Dr. Crawford Long." As C. F. Jackson of Boston, the only other person whose claims for the honor of the discovery of ether anesthesia merit consideration, did not communicate his ideas on the subject to any one until 1843, and then merely verbally to a number of medical friends, and did not suggest it until 1845 to Dr. W. T. G. Morton, who applied it successfully in 1846, the dates in the ether priority controversy are thus cleared up. The other question sometimes discussed, whether or not Dr. Long really appreciated his great discovery, and the assertions often made that he failed to make it known or abandoned the use of ether anesthesia, are all answered by these reproductions, which show very clearly that he continued to use it and to demonstrate its efficiency in spite of opposition on the part of members of the profession around him who could not bring themselves to recognize what a great discovery had been made. The originals of these documents are in the custody of Mrs. Taylor of Athens, Ga., a daughter of Dr. Long. The photographs are deposited in the archives of the University of Pennsylvania, School of Medicine, of which Dr. Long was a graduate. Dr. Smith's reproduction of them in his article[1] has made it possible for practically any one to consult the original documents in the case.

SOCIAL INSURANCE IN CALIFORNIA

The appointment by the governor of California of a commission to study social insurance, and the appropriation of $20,000 for the purpose, is an evidence of the growing interest in this subject. The commission, consisting of five members, is not only directed to study social insurance systems at home and abroad, but is also empowered to recommend schemes for adoption by the state. California has just included occupational diseases within the scope of its workmen's compensation act, and the next logical step is the introduction of an insurance scheme to care for all sickness among wage earners. The more efficient medical care which a system of health insurance would provide for the workers of California is as greatly needed as it was in Great Britain. With the initiation of medical benefit under the British compulsory insurance system, many persons for the first time were able to afford the luxury of medical attention, and for the first time physicians were able to treat disease in its incipient stages among the industrial population. English physicians are expressing their surprise at the mass of suffering which previously was uncared for. The failure of many persons in this country at present to receive medical care constitutes the best argument for a change to the more effectual provision for medical attention offered by health insurance. At this time, when attention is being focused on these forms of insurance new to this country, the American Association for Labor Legislation, after three years of careful study, has prepared the draft of a health insurance bill which, it is announced, will be introduced into several legislatures next winter. This activity justifies the prophecy, previously made by THE JOURNAL, that the enactment of workmen's compensation laws would lead to new measures for both health and accident insurance.

DR. JAMES TAGGART PRIESTLEY—A FESTSCHRIFT

In commemoration of his forty years of practice, Dr. James Taggart Priestley, of Des Moines, has been honored by the issuance of a special number of the *Journal of the Iowa State Medical Society*, styled a "Festschrift." It has been done under the auspices of the Medical Library Club of Des Moines. Dr. Priestley well deserves this honor. As is said editorially in the Iowa journal, "the man who can live a generation or more in the sharpest competition, and retain the affection of his associates, is indeed entitled to expressions of the highest regard as distinctly his own. It is delightful to feel that honors gained by manly struggles for the rightness of things may come at a time of mental and physical well-being, and not after the recipient has passed to a state of indifference." Dr. W. L. Bierring gives a brief historical sketch of Dr. Priestley's illustrious great-great-grandfather, Joseph Priestley, the discoverer of oxygen, who, it will be remembered, spent the last ten years of his life at Northumberland, Pa., continuing the work in science which he had carried on in his native England. Dr. Priestley has well maintained the traditions of his family as a scientist, a man of character and strong individuality, and a leader in his sphere of action. In his long career as a practitioner in Des Moines, his impress has been for the uplift of the science and art of medicine, and for the betterment of fraternal relations in the profession itself. This number of the Iowa state society journal is a credit to those who conceived, as well as to those who carried out, the idea — and to the state society itself. It is splendid from a mechanical standpoint, and decidedly creditable in its contents.

HOSPITAL NOISES

The inhabitant of a large community who is without the experience of a temporary residence in one of its hospitals feels a sort of humanitarian pride in the now familiar signs, "Hospital Street — Make No Unnecessary Noise!" A brief stay in some of these institutions is sometimes sufficient to convince one, however, that the faults of others often seem more patent than our own which are nearer at hand. This applies all too often in particular to the subject of hospital noises, which, unfortunately, have not yet everywhere received the degree of consideration and correction which they demand. Few persons who have not given serious thought to the matter will realize the endless sources

of noise, which is never soothing to a patient, and not infrequently is the occasion of intense psychic irritation to even the most docile inmate of a municipal health institution. Dr. Byam Hollings[1] of the Massachusetts General Hospital has recently pointed out some of the unappreciated noise factors, which will be recalled by the initiated through the mere mention of a word or two. Doors and elevators are rarely noiseless; windows and floors may creak and reverberate; chairs and ward utensils are famed for squeaks and rattles; the slam of dishes is rarely soothing, and the sound of bells and buzzers never reaches an immune auditor. To all of these and many other varied disturbances must be added the multitude of sounds and noises which are traceable to the human element—nurses, orderlies, porters, employees, visitors, physicians and patients themselves. Dr. Hollings reports that in a routine day more than 3,500 persons passed through a doorway in the main corridor of one of the buildings of the Boston hospital. It is thus easy to see how noise can be created. How to minimize it is a timely problem in every institution.

A LOSS TO THE PUBLIC HEALTH SERVICE

As mentioned in our news columns, Dr. John F. Anderson has resigned the position of director of the Hygienic Laboratory of the U. S. Public Health Service to accept that of director of a commercial biologic laboratory. The Public Health Service has sustained other similar losses recently: Dr. M. J. Rosenau, Anderson's predecessor, resigned to accept the professorship of preventive medicine and hygiene at Harvard; Drs. Reid Hunt and Worth Hale left the service to accept the positions of professor and assistant professor of pharmacology, respectively, at the same institution. It may seem discouraging that the Public Health Service should thus be deprived of the services of able men at the period of their greatest usefulness; at the same time, it is gratifying to realize that educational institutions, as well as some private manufacturing concerns, appreciate the value of such men. While occurrences like these must be discouraging to those who are interested in seeing the Public Health Service successful in its splendid scientific research work, it is a consolation to realize that the service is developing men whose work is appreciated.

TETRACHLORETHANE

Several months ago, attention was directed to the occurrence of an unusual illness among the workmen in some of the aeroplane factories of Great Britain.[2] As a rule, the varied symptoms included a general malaise and drowsiness, followed by more or less severe toxic jaundice. An investigation has revealed that this untoward condition is due to intoxication with tetrachlorethane or acetylene tetrachlorid ($CHCl_2 \cdot CHCl_2$). This substance is well known to industrial chemists, and also goes under the trade name of Cellon. Because of its solvent action on cellulose acetate, acetylene tetrachlorid is a constituent of the product used to coat the wings of aeroplanes. A study of its toxicology shows that it has a decidedly harmful influence on the liver and the kidneys. By ordering the proper ventilation of the workrooms and insuring the efficient removal of the toxic vapors, the dangers from this source can be eliminated.

1. Hollings, Byam: Hospital Noises and How to Minimize Them, Mod. Hosp., 1915, v, 226.
2. Poisoning by Tetrachlorethane, Miscellany, THE JOURNAL A. M. A., Feb. 27, 1915, p. 766.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Personal.—Dr. Eugene D. Bondurant, formerly Dean of the University of Alabama, School of Medicine, Mobile, who was operated on last June for duodenal ulcer, has entirely recovered and has resumed practice in Mobile.——Dr. Abijah B. Bennett, Opelika, was struck by an automobile October 10, and sustained serious injuries.

GEORGIA

Drug Victims' Hospital to Close.—It is announced that the Atlanta City Hospital for Drug Victims will be closed November 1. During the existence of the institution, about 150 drug addicts have been treated and pronounced cured.

Personal.—Dr. James S. Greenleaf, Macon, fell from the second story window of his office, October 13, but was not seriously injured.——Dr. Mather M. McCord, Whigham, as the result of a competitive examination, has been appointed full time county health officer of Floyd County.

New Board Officers Elected.—At a meeting of the Georgia State Board of Medical Examiners held October 13, officers were elected as follows: Dr. Richard E. Hinman, Atlanta, president; Dr. Frederick D. Patterson, Cuthbert, vice president; Dr. Charles T. Nolan, Marietta, secretary treasurer.

IDAHO

Examination Required.—Word from the secretary of the Idaho State Board of Medical Examiners states that an examination is still required for the license to practice in that state. It appears that a report to the contrary has been published somewhere and several applicants have sent in their diplomas thinking that they could secure registration by so doing. An examination is essential.

New Officers for Idaho Society.—The twenty-third annual meeting of the Idaho State Medical Association was held at Lewiston, October 13 to 15, forming a part of the triennial joint meeting of the state medical associations of Idaho, Washington and Oregon, and the following officers were elected: president, Dr. Truman O. Boyd, Twin Falls; vice president, Dr. Oscar C. Carssow, Lewiston; secretary treasurer, Dr. Edward E. Maxey, Boise (reelected); and journal trustees, Drs. Robert L. Nourse, Boise, and John N. Alley, Lapwai. Twin Falls was selected as the next place of meeting.

ILLINOIS

Districting the State.—Secretary C. St. Clair Drake of the State Board of Health announces that Illinois will soon be divided into 2,600 districts with a registrar of vital statistics for each district, for the purpose of putting into operation the new state vital statistics law.

Personal.—Dr. Wilfred H. Gardner, Bloomington, is on duty in a British war hospital in London.——Dr. Louis J. Bechtold, Belleville, is ill with tetanus in St. Elizabeth's Hospital in that city.——Dr. John C. Helper, Benbow City, who has been suffering from anthrax, was reported out of danger, October 21.——Dr. Harmon E. Price, Clinton, is reported to have closed his office and discontinued the practice of medicine preparatory to leaving for California in November.——Dr. James A. Kleinsmid, Aledo, who was seriously injured in an automobile accident, October 5, is

slowly improving.——Dr. Hugh A. Kelso, Paxton, was operated on in St. Luke's Hospital, September 29.

State Tuberculosis Society Elects Officers.—At the seventh annual meeting of the Illinois State Society for the Study and Prevention of Tuberculosis held in Danville, October 22 and 23, the following officers were elected: president, Dr. George T. Palmer, Springfield; vice presidents, Drs. Charles W. Lillie, East St. Louis, and Frank D. Rich, Joliet; treasurer, Mr. David R. Forgen, Chicago; and executive committee, Drs. James W. Pettit, Ottawa; Ethan A. Gray, Chicago; Theodore B. Sachs, Chicago; Lewis C. Taylor, Springfield; William A. Evans, Chicago; Mr. George W. Perkins, Chicago, and Mr. Herbert W. Mathews, Pekin.

Chicago

Hospital to Close.—It is announced that the Maimonides (Kosher) Hospital will close November 1, on account of lack of financial support. The hospital is said to have debts amounting to about $100,000.

Personal.—Dr. French S. Cary has been appointed assistant professor of urology and urological surgery, College of Medicine, University of Illinois.—Dr. William S. White, who was operated on at the Evanston Hospital for appendicitis and the removal of gallstones, recently, is reported to be doing well.——Dr. Jabez D. Hammond, who has been ill at his home for several weeks, is reported to be improving.——Dr. Oscar Dodd has been elected president of the Illinois Charitable Eye and Ear Infirmary.——Drs. Duro Guca and Leo M. Czaja have returned after a year in Serbia.

Memorial for Mrs. Preble.—Friends of Dr. and Mrs. Robert B. Preble have undertaken to form a memorial fund for a philanthropic purpose yet to be determined, to express their sorrow over the death of Mrs. Preble, and their sympathy for Dr. Preble and his family. Mrs. Preble had been actively interested in the work of raising funds for the Chicago Collegiate Bureau of Occupations, a bureau which has for its object the securing of positions for women with college training and was also interested in the philanthropic work of the Chicago Women's Club. Any wishing to assist in this work are invited to send checks or inquiries to Mrs. Charles L. Meeks, 5321 Greenwood Terrace.

INDIANA

Dispensary Charges Small Fee.—The Indianapolis City Dispensary, presumably a free dispensary for the indigent, has now decided to charge a fee of 10 cents each for bottles or containers supplied with medicine in the drug department, to those who are able to pay. The fee is entirely voluntary and medicine will not be refused individuals who produce satisfactory evidence of their inability to pay this fee.

Personal.—Dr. Claude C. Crum, Jeffersonville, has been appointed surgeon to the Jeffersonville plant of the American Car and Foundry Company.——Dr. Stephen L. Egart, roentgenologist at the Indianapolis City Hospital, has resigned to take effect, December 15.——Dr. Albert J. Irwin, Goshen, who has been ill for two weeks, has recovered and resumed practice.

Centennial Committeemen Selected.—The following new centennial celebration committees have been announced by the Indiana Historical Commission: committee on medicine, Drs. General W. H. Kemper, Muncie, chairman; William R. Davidson, Evansville; John G. Jones, Vincennes; Joseph D. Heitger, Bedford; William H. Stemm, North Vernon; Joseph H. Weinstein, Terre Haute; Oliver J. Gronendyke, Newcastle; W. Burrette Kitchen, Indianapolis; Frederick A. Tucker, Noblesville; Otis B. Nesbit, Valparaiso; Godlove G. Eckhart, Marion; Elmer E. Morgan, Fort Wayne, and Angus C. McDonald, Warsaw. Committee on hygiene and public health: Drs. William F. King, chairman, Indianapolis; Charles S. Bosenbury, South Bend; Charles A. Zinn, Frankfort; Eric A. Crull, Fort Wayne; Herman G. Morgan, Indianapolis; W. D. Thurber, Indianapolis; Porter H. Linthicum, Evansville; Henry B. Shacklett, New Albany; Charles C. Wert, Covington; Harry J. Thompson, Laporte, and Prof. J. C. Sanders, Columbia City.

IOWA

Tuberculosis Foes Organize.—The Iowa Association for the Prevention of Tuberculosis was organized in Des Moines, October 4, and the following officers were elected: president, Dr. William W. Pearson, Des Moines; vice presidents, Gov. Charles W. Clark, Dr. Walter L. Bierring, Des Moines, and Mrs. Charles Saunders, Council Bluffs; secretary, Dr. John H. Peck, Des Moines; treasurer, C. H. Stevenson, Des Moines, and assistant secretary treasurer, Dr. Herbert V. Scarborough, Oakdale.

Hospital Notes.—Mine workers of Iowa have purchased the old building of the Drake University Medical School, Des Moines, and will use it for a hospital for sick and injured miners and also will use it as a headquarters for their first aid teams.——Marengo is attempting to raise $20,000 for the building of a municipal hospital.——The Cedar Valley and May hospitals, Charles City, have incorporated under the name of the Cedar Valley Hospital. The institution is to be opened with equal rights to all physicians and surgeons of Floyd County.

Distinguished Visitors to Fort Madison.—At the meeting of the Fort Madison Medical Society, October 8, the guests of honor were Dr. William J. Mayo, Rochester, Minn., who spoke on "Surgery of the Spleen"; Dr. Victor C. Vaughan, University of Michigan, Ann Arbor, who delivered an address on "Infection and Immunity"; Dr. Richard H. Harte, Philadelphia, who spoke of "Typhoid Perforation"; and Dr. Donald C. Balfour, Rochester, Minn., who read a paper on "Gastric Ulcers." A reception and banquet were held in the Masonic Hall during the afternoon.

Personal.—Dr. Ernest T. Kegel, Iowa City, county physician of Johnson County, fractured his left leg below the knee while cranking his automobile, recently.——Dr. George L. Day, Lone Tree, is reported to be critically ill at a hospital in Iowa City.——Dr. Henry Matthey, Davenport, has been appointed surgeon in chief of the Military Hospital at Brounsberg, East Prussia.——Dr. Ella Blackburn, physician in charge of the women patients at the Iowa Hospital for the Insane, Mount Pleasant, is said to have been dismissed by the State Board of Control, October 5, as the result of an investigation made by the board of charges filed against the institution by Dr. Amelia A. Dickinson, Iola, Kan., a former intern.——Dr. Wilton W. McCarthy, Des Moines, who was seriously injured in an automobile accident several weeks ago, has returned to his home convalescent from the Methodist Hospital.——Dr. Clara B. Whitmore, Sioux City, started for Shanghai, China, October 4, to take up her new work as surgeon and gynecologist to the Margaret Williams Hospital, Shanghai.——Dr. Walter A. Matthey, Davenport, is under treatment in the Mercy Hospital for streptococcus infection of the left hand contracted recently during an operation.——Dr. Charles H. Cogswell, Cedar Rapids, after a sojourn in Egypt, has decided to return to France and enter the hospital service of the French army.——Dr. Edward R. Ames, Morrice, was seriously injured recently in a collision between his automobile and another motor car.——Dr. Mark F. Boyd, Iowa City, has succeeded Dr. Charles S. Woods, Iowa City, resigned, as state epidemiologist and superintendent of the department of preventive medicine in the medical department of the University of Iowa.

MARYLAND

Civic Club Formed.—A meeting of physicians of Baltimore was held at the Medical Library, October 8, to organize a physicians' civic club, the idea of which is to familiarize physicians with the newer forms of city government.

Memorial Scholarship Fund.—The friends of the late Prof. David Streett, Baltimore, have suggested the establishment of a memorial scholarship in his name at the University of Maryland School of Medicine, for worthy but indigent medical students.

Health Officials Visit Sydenham.—Health Commissioner John D. Blake and Dr. William T. Howard, Jr., the new assistant commissioner, made their first visit of inspection to Sydenham Hospital, the municipal hospital for infectious diseases, to acquaint themselves with the workings of the institution.

Insane Negroes to be Transferred.—The authorities at the Crownsville State Hospital, Dr. Robert P. Winterode, superintendent, have notified the supervisors of city charities that they will transfer about 200 negroes from the insane department at Bay View Asylum to the Crownsville State Hospital, the transfer to take place on or about October 28-29. This means that practically all the negro insane will be removed from this institution and cared for at a state hospital.

Personal.—After a year spent in France caring for the wounded, Dr. Roades Fayerweather has returned to Baltimore. In response to a request of the French officials, Dr.

Fayerweather talked little of conditions in France, but told of the hospital at Pau, where he spent most of his time as the head of the American Red Cross unit.——Dr. John F. Spearman, who has been stationed at the Red Cross Hospital at Glewitz, Germany, has returned to Baltimore.——Dr. Richard P. Strong, director of the International Sanitary Commission in Serbia, reached New York, October 4, on the *Duca degli Abruzzi*. He reports that more than 100,000 deaths from typhus occurred during the present outbreak.——Dr. Frank J. Powers has succeeded Dr. George L. Wilkins, Baltimore, who had been for more than fifteen years physician to the city jail.——Dr. James A. Nydegger has been appointed a member of the Board of Visitors and Governors of St. John's College, Baltimore.

MASSACHUSETTS

Ether Day.—The sixty-ninth anniversary of Ether Day was observed October 16 at the Massachusetts General Hospital. Dr. William Williams Keene, Philadelphia, delivered an address on "The Dangers of Anesthesia" and during the day demonstrations were carried out at the hospital from 10 a. m. to 1 p. m.

Personal.—Dr. Benjamin H. Metcalf, Winthrop, has arrived home after an automobile trip from Winthrop to the Panama Pacific Exposition, San Francisco, in which his machine carried five passengers, baggage and equipment.——Dr. Edward H. Nichols, who recently returned from France, delivered an address before the metropolitan district branch of the Massachusetts Dentists' Society, October 11, on "War Surgery in France."——Dr. Timothy J. Sullivan, Somerville, has been appointed medical attendant for the employees in the postal service.

Changes in Harvard Faculty.—Dr. Martin J. English has resigned as fellow in pediatrics; Dr. Raymond B. Parker as alumni assistant in obstetrics; Dr. Cyrus H. Fiske as assistant in biological chemistry; Dr. Clarence C. Little as research fellow in gynetrics, and Dr. Thomas Ordway as instructor in medicine in Harvard Medical School.——The board of overseers of Harvard College has appointed Dr. Marshall Fabian assistant professor of pathology in the medical school; Dr. Edward A. Doisy assistant in biological chemistry, and Dr. Samuel E. Chiu, Austin, teaching fellow in biological chemistry.

Question of Cures Ruled Immaterial.—In the trial of Francis F. Davies and George J. La Plant, chiropractors, in the supreme court at Springfield, for practicing medicine without a license, attempts were made by the defense to introduce evidence to show that "cures" had been effected. These questions were ruled out as immaterial. Judge Irwin stated that the question of cures was not at issue and it made no difference if the men performed miracles. He declared the question at issue was whether or not the men had engaged in the illegal practice of medicine as charged. The defendants were fined $500 each. This trial is thought to establish definitely the legal status of chiropractic in Massachusetts. The supreme court in the Zimmerman case decided a few months ago that chiropractic was the practice of medicine and the present case has decided that it is not simply massage. Its followers, therefore, are subject to the requirements of the medical practice act.

MINNESOTA

Physicians' Building Planned.—Plans have been prepared on Second Avenue, Minneapolis, between Sixth and Seventh streets, for a twelve-story building to be used by physicians. The building will cost about $1,000,000.

Dermatologists Organize.—The Minnesota Dermatological Society was organized at a meeting held in Minneapolis, October 19, members being present from Minneapolis, St. Paul, Duluth and Rochester. Regular meetings will be held four times a year alternately in St. Paul and Minneapolis.

Personal.—Dr. Bert R. Karn, Ortonville, was operated on for appendicitis, October 11, at the Grand View Hospital, Ortonville.——Dr. Louis S. B. Robinson has resigned as assistant superintendent of the Minnesota State Sanatorium for Consumptives and will return to his practice in St. Paul in November.——Dr. Joseph Nicholson, Brainerd, was operated on for appendicitis, recently.——Dr. Owen J. Evans, Minneapolis, was operated on at Hill Crest Hospital, October 9, for osteomyelitis of the left femur.

MISSOURI

Petition for Quarantine of Syphilitic.—Probably a unique instance in the campaign against venereal diseases is the issuing of an injunction in Springfield to quarantine a woman afflicted with syphilis. The health commissioner submitted a petition to the court for such an injunction, and the court, of which the judge is the Hon. Arch A. Johnson, granted his petition and the woman was placed in a hospital and compelled to take treatment. The text of the petition follows:

IN THE CIRCUIT COURT OF GREENE COUNTY, MISSOURI.
DIVISION NO. 2, SEPTEMBER TERM, 1915.

Edwin F. James, City Health Commissioner, Plaintiff
vs.
Margaret Dale, Defendant

Plaintiff states that he is the Public Health Commissioner of the City of Springfield and as such is charged with the care and responsibility of the health of the citizens of said city.

Plaintiff states that the defendant is an unmarried female of the age of about twenty years and is a resident of said City of Springfield, Missouri.

Plaintiff states that the defendant Margaret Dale is now infected and has for sometime past been infected with a venereal disease, to-wit, with the disease commonly known as syphilis.

Plaintiff states that defendant is a woman of bad repute and plies her vocation of a common bawd and habitually offers herself and her body for sexual commerce in the said City of Springfield and at other points in Greene County, Missouri, and is now exposing herself in said county on the banks of James River for sexual commerce, and as plaintiff is informed and believes, is now engaging in such sexual commerce with divers persons to plaintiff unknown.

Plaintiff states that by reason of the premises the defendant is a menace to the health and morals of the community and her unrestrained freedom and acts of sexual commerce constitute her a public nuisance and a menace to the people of said county and City of Springfield.

That by virtue of the laws creating the office now held by plaintiff, he is in law charged with the maintenance of good health and is charged with the duty of keeping said City free and clear of contagious and infectious diseases and is charged with the duty of safe-guarding said City and its inhabitants from disease and death.

Plaintiff states that unless his prayer herein be granted he is remediless at law and no action in law will afford plaintiff an adequate or full and complete remedy at law.

Plaintiff states that for the safe-guarding of the health of the community defendant should be quarantined for said disease and should be restrained from plying her vocation and should be restrained and placed under such charge as will prevent the spread of such disease.

WHEREFORE, Plaintiff prays that a temporary writ of injunction issue commanding that she be limited to her movements to a certain specified quarter and that she be placed under the care of a competent physician until she be purified and cleansed of such disease.

EDWIN F. JAMES, Plaintiff.
By T. J. DELANEY & PERRY T. ALLEN, his attorneys.

NEW YORK

Insane Hospital Changes.—Dr. John C. Feltz, assistant to the medical director of the State Hospital for the Insane at Schenectady, N. Y., has resigned and will make his home at Gettysburg, Pa., and has been succeeded by Dr. Edgar B. Funkhouser.——Dr. Hibbert R. Roberts, Rochester, N. Y., has been appointed assistant physician to the Dannemora State Hospital for the Insane.

No Danger of Anthrax Epidemic.—The State Industrial Commission has contradicted the rumors that there is danger of an epidemic of anthrax in this state. According to the records of the agricultural department anthrax was reported in animals in fifteen counties in 1913, in sixteen counties in 1914, and in ten counties thus far in 1915. Aside from the cases reported in the three metropolitan districts, six cases with two deaths have been reported from other counties.

Lay Cornerstone at Letchworth Village.—The laying of the cornerstone of the new attendants' home at Letchworth village for the feebleminded, October 19, marks another step in the progress of this institution. On this occasion, the president of the board of directors, Frank A. Vanderlip, announced that $750,000 had thus far been expended on permanent improvements for the village and that the total cost would be about $3,500,000. Governor Whitman laid the cornerstone and in his address announced his policy of dealing with the increasing number of insane persons in this state. He recommended the establishment of five new dispensaries as an aid to the home treatment of incipient insanity in connection with the hospitals for the insane at Buffalo, Binghamton, Middletown, Utica and Willard. In the hospitals already having dispensaries, he unfolded plans for an extension of that line of work. Through special efforts of the hospital commission last year the number of

patients on parole was increased by 439. Each patient cared for at home represents a saving of $208 for the state.

New York City

Memorial to Dr. Flint.—At a meeting of the faculty of Cornell University Medical College October 15, a memorial to Dr. Austin Flint was read and adopted. This memorial sets forth the achievements of Dr. Flint as a scientist, teacher and orator.

Society for Care of the Aged.—The New York Geriatric Society was recently organized with the object of studying diseases of advancing years. Dr. Robert Abrahams was elected president; Dr. Edward P. Swift, vice president, and Dr. Ignatz L. Nascher, secretary.

Greater New York Medical Association.—At the meeting of the Medical Association of the Greater City of New York held in DuBois Hall of the New York Academy of Medicine, October 18, Dr. E. Bosworth McCready, Pittsburgh, read a paper entitled "Paedology and Its Possibilities; the Study, Treatment and Education of Children Who Require Special Attention," illustrated by lantern slides.

Personal.—Dr. Vernon O. Heddens sailed for France as assistant surgeon with a hospital unit, October 16.——Dr. Merrill N. Foot, Richmond Hill, returned October 5 on the *Rochambeau*, after several months on duty with Mrs. Harry Payne Whitney's Hospital at Juilly.——Dr. Mary M. Crawford, Brooklyn, has returned after nearly a year of service with the American Ambulance Hospital near Paris.

Cornell Medical College Opening.—Cornell University Medical College entered on its eighteenth year with an excellent enrollment. Dr. John A. Hartwell, president of the Cornell Medical Society, presided at the opening exercises, at which addresses were made by Mr. Arthur F. Cratzer, representative of the senior class, and Dean William M. Polk, who spoke on the "Advance in Modern Medicine."

No More Horse Ambulances.—All horse drawn ambulances used in the service of the city hospitals in Manhattan and the Bronx, including Bellevue, Gouverneur, Harlem and Fordham hospitals, have been withdrawn from service and replaced by motor ambulances. Some of the horses just retired have been in the service twenty years and will be transferred to the city's inebriate farm at Warwick, N. Y. Both efficiency and economy will result from this change.

Request for Census Granted.—It has just been announced that Mayor Mitchell has granted the request of Commissioner Sigismund S. Goldwater for a census of Manhattan to be taken by the police following the election. This step has resulted from the failure of the state census board to furnish the department with any satisfactory figures from the state census of last spring. The department's calculations, hitherto generally accurate, have shown 600,000 more persons in the city than the number indicated by the state census board. If a large discrepancy is found between the figures obtained and those of the state census board, a census of the other boroughs will also be taken.

Report on Laboratory of Health Department.—At the special request of Commissioner Sigismund S. Goldwater, the medical societies of the counties of New York and Kings appointed a committee last May for the purpose of investigating the diagnostic laboratories of the department of health. A report based on this investigation has just been submitted to the health department. It states that containers and supplies are sometimes lacking at the different stations; that specimens are not collected after 4 p. m. and that transportation facilities to and from the department are slow and often burdensome. The investigating committee mentions the need of additions to the present staff, and advises that incubators be operated in certain boroughs for diphtheria cultures and a collection made at a later hour than is now customary. It suggests further the operation of several automobiles for the purpose of collecting specimens and carrying supplies.

NORTH CAROLINA

Personal.—Dr. Robert Crawford, Rock Hill, has returned after a service of about one year in Germany with the Red Cross.——Dr. Benjamin F. Royal, Morehead City, has been appointed a member of the board of directors of the Eastern Hospital for the Insane, Goldsboro, succeeding Dr. W. E. Headen, Morehead City, resigned on account of ill health.

Hospital Notes.—The contract for the Edgecombe Central Hospital has been awarded by the county commissioners to a firm of contractors in Sanford for $10,693.——Drs. Byrd Charles Willis and Edmund Simpson Boyce announced that they have taken over the management of the Parkview Hospital, Rocky Mount. Drs. J. P. Whitehead, Ivan P. Battle, Richard H. Speight, Jr., Emil B. Quillian and Joe P. Speight will continue their connection with the hospital as before and Drs. George Ben Johnston and A. Murat Willis, Richmond, Va., will continue as consulting surgeons on the staff. ——The Baby Hospital in the Bear Annex to the James Walker Memorial Hospital, Wilmington, closed September 29 after a very successful season in which fourteen babies were under treatment, ten of whom were returned to their parents recovered, two died and two were still under treatment at the time of the closing of the institution. The management hopes to have a building of its own by May 1 of next year.

PENNSYLVANIA

Personal.—Dr. William S. Wheeling, Spangler, is ill in the Spangler Hospital with appendicitis.——Dr. David H. Bemis, West Middletown, is reported to be ill with bronchitis.——Dr. John G. Thomas, Newton Square, is reported to be critically ill as the result of a bite of a poisonous insect. ——Dr. Warren E. Forsythe has been placed in charge of the health service of the Pennsylvania State College.——Dr. Daniel P. Maddox, Chester, has been reappointed a member of the Medical Bureau of Medical Education and Licensure.

Philadelphia

Funds for Negro Hospital.—More than 200 workers started October 19, on a ten-day campaign to raise $150,000 for the Lincoln Memorial Hospital for negroes.

Lip-Reading Clinic Opened.—The first lip-reading clinic was held at the Polyclinic Hospital, October 12, under the instruction of Dr. G. Hudson Makuen. Clinics will be held at the hospital every Tuesday, Thursday and Saturday afternoon, from 2 to 3 o'clock.

Reception to Surgeon-Generals.—A reception was given October 15 by the Medical Club of Philadelphia at the Bellevue-Stratford, in honor of Rear Admiral William C. Braisted, Surgeon-General, U. S. Navy, and Surgeon-General Rupert Blue, U. S. P. H. S.

Personal.—Dr. William G. Spiller, assistant professor of neurology in the University of Pennsylvania, was elected professor of neurology, October 18, succeeding Dr. Charles K. Mills, resigned, and elected emeritus professor of neurology.——Dr. Eileen Giles has been appointed physician in charge of the Alto Pass (N. C.) Hospital.——Dr. Melvin M. Franklin has been elected orthopedic surgeon to the Philadelphia General Hospital, to succeed Dr. Gwilym G. Davis, resigned after fourteen years' service.——Dr. J. Torrance Rugh has been elected professor of orthopedic surgery in the Woman's Medical College.——Dr. John W. West was recently elected president of the Ohio Society.——Dr. Michael G. Wohl has resigned as pathologist to the Howard and Samaritan hospitals to take charge of the pathological laboratory of the Nicholas Senn Hospital, Omaha.——Dr. John M. Baldy has been reappointed a member of the State Bureau of Medical Education and Medical Licensure by Governor Brumbaugh.——Dr. Henry A. Strecker has been appointed chief medical inspector of the Bureau of Health, to succeed Dr. Charles A. Groff, resigned.——Dr. Florence C. Child has been appointed medical inspector of the organization of Child Hygiene.

TEXAS

Hospital Opened.—The joint City and County Hospital, Wichita Falls and Wichita County, was opened to patients, October 15.

Upholds Vaccination Law.—After two years of litigation the supreme court of Texas has upheld the right of school boards to compel the vaccination of children before they will be allowed to enter the public schools. This decision was rendered in the case of Dr. A. D. Zucht against the San Antonio School Board, mention of which was made in THE JOURNAL at the time the action was begun.

CANADA

Hospital News.—The offer made several months ago by Dalhousie University, Halifax, N. S., to supply a hospital for overseas service has been accepted by the Canadian Militia Department. The following have offered to man that hospital: Drs. John Stewart, J. G. MacDougall, George M.

Campbell, J. R. Corston, L. M. Murray, E. V. Hogan and A. G. Nicholls. It is possible that the hospital will go to Alexandria, Egypt.——No. 6 Stationary Hospital supplied by Laval University is now up to full strength. It may leave for the front any day. The commanding officer is Lieut.-Col. G. E. Beauchamp; Majors J. O. D. LaCroix, J. P. Décarie and Georges Bourgeois; Capt. J. A. Lussier; Lieuts. J. U. Gariepy, J. de G. Joubert, J. E. Lorrain, L. D. Collin, Henri M. DuHamel.

Ontario Medical Commission.—The University of Toronto and the Ontario Medical Association presented their views to the Ontario Medical Commission during the past week. For the university, President R. A. Falconer was the chief speaker. He stated that every man who wants to practice the art of healing should have the proper medical training. If he wants to improve on that and become an osteopath, or chiropractor, well and good. President Falconer believed the university had a duty to perform to the public in preparing doctors for the world and was emphatic in his views regarding the danger of allowing men unlearned in medicine to practice at will. He pointed out that any modern school for medical practitioners was kept up at great expense to the community, and it was worth it, because, once prepared, a doctor gave long service to the community.——Replying to a question of the commissioner, Dr. Clarke, superintendent of the Toronto General Hospital, stated he did not favor osteopaths and chiropractors being allowed the privilege of treating patients in the hospitals, under existing conditions. He pointed out that all the medical students of the University of Toronto finish their training in the hospitals and only those can be allowed in who have proper medical training. ——Dr. Harry B. Anderson, president of the Ontario Medical Association; Dr. R. A. Reeve, Toronto; Dr. Charles Sheard, Toronto; Dr. Howitt and McKinnon of Guelph, and others spoke for the Ontario Medical Association.——The chiropractors were also given a hearing.——Next week the commissioner announced he would take evidence under oath. The Academy of Medicine, Toronto, will be represented by several speakers or witnesses, who will deal with military surgery and sanitary science, life insurance examinations, surgery, bacteriology, etc.

Personals.—Word comes from England that Lieut.-Col. Walter McKeown, M.D., Toronto, stationed at Folkstone, England, has been appointed president of the Medical Pension Board. It is likely this refers to Canadian soldiers, although it is understood that the University of Toronto Base Hospital with which Dr. McKeown was attached had gone to the Mediterranean and was stationed in Sicily and would most probably be used in connection with the campaign in Serbia.——Dr. John M. Robb, Blind River, Ontario, has been selected as the conservative candidate for the Ontario legislature for Algoma.——Dr. Hugh A. Farris, Lake Edward, Que., has been appointed medical superintendent of the St. John County (N. B.) Sanatorium.——Dr. Joseph A. Leduc, Montreal, has been appointed head physician of the Foundling Hospital of the Grey Nunnery, in succession to the late Dr. Isiäe Cormier.——Capt. George R. Philip and Reginald S. Pentecost, Toronto, have been gazetted to the rank of majors.——Lieut.-Cols. Geo. S. Rennie, Hamilton, and Lorne Drum, Ottawa, have been promoted to temporary colonels. Both are serving abroad.——Dr. William Mann, Winnipeg, is temporary medical officer of the twenty-third reserve battalion, at present in England.——Col. Robert J. Blanchard, Winnipeg, is the president of the permanent board at Moore Barracks Hospital.——Dr. A. C. Scott, Indian Head, Sask., has been appointed to the medical staff of the Canadian forces in England.——Drs. George A. Ings and Frank H. Newburn, Calgary, Alta., have been gazetted majors in the Royal Army Medical Corps.——Dr. James W. Richardson, formerly of Calgary, has been appointed surgeon-specialist in the Imperial Army.——Major Charles A. Peters, M.D., Montreal, has been gazetted lieutenant-colonel.——Lieut.-Col. Archibald E. Ross, Sutherland, Sask., has been appointed assistant director of medical services of the first Canadian division.

GENERAL

Southern Medical Association to Meet.—The annual meeting of the Southern Medical Association will be held in Dallas, Texas, November 8 to 10. The general convention meetings will be held in the City Hall auditorium.

Ohio Valley Physicians to Meet.—The seventeenth annual convention of the Ohio Valley Medical Association will be held in Evansville, Ind., November 3 and 4, under the presidency of Dr. E. Otis Smith, Cincinnati. The headquarters of the association will be at the hall of the Evansville Business Association.

Pediatrists Organize.—The Central States Pediatric Society was organized in Chicago, October 15, and the following officers were elected: president, Dr. Borden S. Veeder, St. Louis; vice president, Dr. Olin W. Rowe, Duluth, Minn.; and secretary-treasurer, Dr. Clifford G. Grulee, Chicago. The next meeting will be held in St. Louis.

Alumni Election.—On October 16 the Massachusetts General Hospital Alumni Association held its annual meeting and banquet in Boston and the following officers were elected: president, Dr. Elbridge G. Cutler, Boston; vice presidents, Drs. Walter Channing, Brookline; George K. Sabine, Brookline, and William S. Thayer, Baltimore; and secretary-treasurer, Dr. Byam Hollings, Boston.

Return from Typhus-Stricken Serbia.—Four American physicians who have played a prominent part in combating typhus fever in Serbia, arrived in Boston on the *Cretic* last week. They include Dr. Louise Taylor Jones, Boston; Dr. Thomas W. Jackson, Washington, D. C., who succeeded Dr. Richard P. Strong as head of the American Sanitary Commission in Serbia; Dr. Joseph R. Thompson, Cleveland, and Dr. George W. Mellon, Beaver, Pa.

First Aid Treatment for Workmen.—At the convention of the National Association of Industrial Accident Boards and Commissions, held in Seattle, September 30 to October 2, quicker and more adequate medical treatment for injured workmen was vigorously advocated. Dr. Raphael Lewy, New York City, declared that of the 6,000 cases of injury he had examined in the past year 18½ per cent. had developed infection as the result of the lack of timely and expert treatment.

Railway Surgeons Meet.—At the annual meeting of the American Association of Railway Surgeons held in Chicago, October 12 to 15, the following officers were elected: president, Dr. Frank T. Fort, Louisville, Ky.; vice presidents, Drs. John M. Dodd, Ashland, Wis.; Edward H. Griswold, Peru, Ind., and Charles P. Frantz, Burlington, Iowa; and treasurer, Dr. Henry B. Jennings, Council Bluffs, Iowa. Asst. Surg.-Gen. William Colby Rucker, U. S. P. H. S., read a paper before the association on "Intent and Purpose of the Interstate Quarantine Regulation."

Convention of Southwestern Physicians.—The Medical Association of the Southwest held its tenth annual meeting at Oklahoma City, October 11 to 13, under the presidency of Dr. Jefferson D. Griffith, Kansas City, Mo. Fort Smith, Ark., was selected as the meeting place for 1916, and the following officers were elected: president, Dr. Joseph D. Becton, Greenville, Texas; vice president, Dr. Edward H. Martin, Hot Springs, Ark., and secretary-treasurer, Dr. Fred H. Clark, El Reno, Okla. (reelected).

Mississippi Valley Medical Association Meeting.—The forty-first annual meeting of the Mississippi Valley Medical Association was held in Lexington, Ky., October 19 to 21, under the presidency of Dr. Hugh Cabot, Boston. Indianapolis was selected as the next place of meeting and the following officers were elected: president, Dr. Willard J. Stone, Toledo, Ohio; vice presidents, Drs. Channing W. Barrett, Chicago, and Carl Lewis Wheeler, Lexington, Ky.; secretary, Dr. Henry Enos Tuley, Louisville, Ky. (reelected); and treasurer, Dr. Samuel C. Stanton, Chicago (reelected).

Conservation of Life.—The keynote of the Safety First Federation of America in Detroit, October 19 and 20, was the conservation of life, limb, health and property. Among the means to this end recommended by the association, are, the enactment of laws prohibiting the sale of dangerous weapons and explosives; the supply of free antitetanus serum by state and municipal authorities to be so placed that it can be conveniently and quickly obtained; the prohibition of the sale of firearms; the prohibition of common drinking cups and roller towels, and of spitting in public places and on sidewalks; the establishment of public baths in cities and the medical and dental inspection of schoolchildren.

Bequests and Donations.—The following bequests and donations have recently been announced:

Children's Seaside Home of Atlantic City, N. J., $1,000; St. Timothy's Hospital, Philadelphia, $15,000, to endow three free beds in memory of Samuel L. Robeson, Sr., and Hannah W. Robeson, Samuel L. Robeson, Jr., and Louise Robeson, and Thomas A. Bradley and Mary A. Bradley, respectively, and $5,000 to the Home for Incurables, Philadelphia, for

the endowment of a free bed in memory of Samuel L. Robeson, Jr., and Louise E. Robeson, by the will of Sarah J. Robeson.

Kansas University School of Medicine, $30,000, by the will of Dr. Joseph L. Porter, Paola, Kan.

Boston Floating Hospital, $25,000, to be known as the Nellie Ingalls Hodges fund, by the will of Walter William Hodges, Brookline, Mass.

Pennsylvania Hospital, Philadelphia, about $50,000, for the endowment of three beds in memory of her son Robert Hare Pile, by the will of Elizabeth Pile.

Polyclinic Hospital, Philadelphia, for a free bed as a memorial to Charles Baeder; St. Luke's Hospital and Northern Home for Friendless Children, Philadelphia, each $5,000, by the will of Julia Baeder.

Alvarenga Prize.—The College of Physicians of Philadelphia announces that the Alvarenga prize for 1915 has been awarded Dr. Joshua E. Sweet, Philadelphia, for his essay entitled "The Surgery of the Pancreas," and that the next award of the prize, being the income for one year of the bequest of the late Señor Alvarenga, and amounting to about $250, will be made July 14, 1916, provided that an essay, deemed by the committee of awards to be worthy of the prize, shall have been offered. Essays may be on any subject, but must not have been published. They must be typewritten and if in any language other than English, it must be accompanied by an English translation, and must be received by Dr. Francis R. Packard, secretary of the college, 19 South Twenty-Second Street, Philadelphia, on or before May 1, 1916. Each essay must be unsigned, but must be plainly marked with a motto, and be accompanied by a sealed envelope bearing outside the motto of the paper, and within, the name and address of the author. The successful essay, or a copy of it, is to remain in the possession of the college and other essays are to be returned on application within three months after the award of the prize.

LONDON LETTER

London, Oct. 8, 1915.

The War

THE OPENING OF THE MEDICAL SCHOOLS

The medical schools are opened this session under very unusual circumstances. The war has not only depleted the staffs and the students already in the schools, but has also limited the number of entries. The only London school which is able to record an increase in the number of students entering this year is the London School of Medicine for Women, where the increase is a record one, in consequence of the great demand for women physicians brought about by the shortage of men resulting from the demand of the army. In many of the schools the usual opening address was dispensed with. At Charing Cross Hospital, Dr. R. M. Burrows, principal of Kings College, said that the colleges and hospitals of London had done yeoman service in putting their students and their apparatus entirely at the service of the government and the nation during the war. At King's College a class for the training of munition workers was started, and it had proved the model for other classes instituted in the London County Council Polytechnics. Universities, colleges and hospitals in London and throughout the kingdom had placed the brains of their scientists at the service of the special problems of the moment. It was for the universities to show that they could make their education flexible. While they should welcome every opportunity to do definite war work, they had also to lay stress on the general principle that no nation went under except through a lack of brain power, and that financial and military successes were, after all, as much dependent on education as literature or science.

At the Leeds medical school the opening address, on "Science and War," was delivered by Sir William Osler, who treated the subject in his usual historical and literary manner. The following is a picture given by him of a huge British hospital camp "somewhere in France" containing thousands of beds: "The inner lining of the tents was of a colored Cawnpore material with attractive patterns. More beautiful wards cannot be imagined, so rich and varied in coloring. And to the call of country and humanity are men and women from all parts of the English-speaking world, seasoned old veterans of the Army Medical Corps, consultants from London and Edinburgh, specialists of distinction, general practitioners, men from Australia and Canada looking after their special hospitals, with units of our brothers from Harvard University and from Chicago. Some of these groups, as that from McGill University, Montreal, have brought over a complete staff, with nurses and orderlies and all the necessary apparatus for a 1,040-bed hospital. Other Canadian university units have come from Toronto, Kingston, Laval and Dalhousie. At home the members of these staffs are busy teachers and practitioners. The nurses have come from all parts of the empire, and two groups from the United States." Dealing with the subject of the war and international science, he said that to one who is by temperament and education a follower of Sir Thomas Browne and free from the "common antipathies" and "national repugnances," one sad sequel of the war will be, for this generation at least, the death of international science. "An impassable intellectual gulf yawns between the Allies and Germany, whose ways are not our ways and whose thoughts are not our thoughts."

At the London School of Medicine for Women, Dr. Florence E. Willey said that the lack of labor which is being increasingly felt on all hands has opened the doors of various industrial pursuits to women who had long desired such an outlet for their energies, and has come as a call to service to others who had never before awakened to any need to use their talents for the common weal. The summons to women to fill up the ranks has come from all kinds of professions and trades, but in none perhaps is the demand more urgent than in the medical profession, and that for many reasons, immediate and future. The ever-increasing number of medical men and women employed in military service abroad, together with the number employed in either whole or part time military service at home, has taxed the resources of the medical profession to the utmost, for in these ways the war has directly absorbed the services of many thousands of physicians. But in more indirect ways the war is creating a future need which threatens to be very serious indeed. Young men who would now be entering on a training for some professional career are enlisting for naval or military service, and thus the supply of medical students in the men's schools is seriously diminished, and this means for years to come decreasing numbers of men in the profession of medicine. If men are to answer the call of their country at this crisis they cannot make good this deficiency; hence women must; and that they are willing to do so is made clear by the doubling of the usual entry to the London School of Medicine.

BERLIN LETTER

Berlin, Sept. 28, 1915.

Personal

September 23, Professor Waldeyer celebrated his fiftieth professorial jubilee. At the time of his appointment he was a professor of pathologic anatomy in Breslau, and not until 1872, when he was called to Strassburg, was he appointed professor of normal anatomy. October 6 he will celebrate his seventy-ninth birthday.

Prof. Ernst Neumann, formerly director of the pathologic institute in Königsberg, and a well-known authority on diseases of the blood, celebrated the sixtieth anniversary of his doctorate, September 24. On the same day Professor Knauff of Heidelberg, formerly ordinary professor of hygiene and medical jurisprudence, celebrated his eightieth birthday.

Professor Neufeld, division chief at the Institute for Infectious Diseases at Berlin, has been appointed Geheimer Medizinalrat. Since Löffler's death he has been acting director of the institute, a position he will probably fill until after the war, as there is no probability of securing a successor to Löffler's position at this time. All the hygienists and sanitarians are in the field and cannot be persuaded to return to civil work at this time. Furthermore, there is not much choice, because of the scarcity of men from whom a selection may be made. Naturally, one would have to consider Professor Kolle, ordinary professor in Bern, and Professor Uhlenhuth, ordinary professor in Strassburg. Professor Pfeiffer of Breslau and Professor von Wassermann, the two most prominent bacteriologists to be considered for this position, are disinclined to accept the appointment. Wassermann must also be considered a probable successor to Ehrlich, although I do not believe that he will leave his position at the Institute for Experimental Therapy in Berlin.

Professor Schmidt-Rimpler, formerly ordinary professor of ophthalmology died at Halle, September 23, aged 77. While a student, he was a favorite of Albrecht von Graefe, and in 1863, when he completed his examination, he was made assistant at von Graefe's private clinic. In 1864 he took part in the war against Denmark; later he entered general practice and was appointed on the staff of the medi-

cal division of the Charité, and in 1866 he again took the field against Austria. When Graefe established his own service in the Charité in 1868, Schmidt-Rimpler was appointed his assistant. Von Graefe died in 1870, and Schmidt-Rimpler conducted the clinic until a successor was appointed, as he himself had received a call to Marburg. He remained at Marburg until 1891, then went to Göttingen, and in 1901 was called to Halle. He remained in active service until last year, and took an active part always in the development of ophthalmology, contributing many hundreds of articles on the subject. These appeared in current literature and also as a part of collaborated works. His best-known publication was a textbook on diseases of the eye and ophthalmoscopy, which was published in English, Italian, Russian and Japanese. He was also very much interested in the question of shortsightedness among schoolchildren.

The Commandments Governing the Relations of the Public with the Doctor

The medical society of Frankfort has elaborated ten commandments or rules to govern the relations of the public to the doctor. These rules have been printed and the doctors are asked to distribute them among their patients and to post them in their waiting rooms. The rules are as follows:

1. Do not call the doctor unnecessarily for trivial illness, and do not wait too long in the case of serious illness or until the illness has reached such a stage of severity that it is imperative to call the doctor. Much valuable time may be lost by delay in securing medical assistance.

2. If your condition permits, consult the doctor during his office hours and do not ask him to come to you. Some examinations can be made only in the doctor's office, where certain instruments which cannot easily be transported are kept.

3. If you have decided that you will call the doctor, inform him to that effect before he leaves his home to make his calls; that is, before 9 o'clock in the morning. The doctor must lay his plans for the day's work ahead of time, and if you wish to assure yourself of an early visit, send in an early call.

4. Do not ask the doctor to call at a certain hour, but leave the time for making a visit to him, if your case is not urgent or not an emergency case which demands an immediate response to your call. The doctor is never master of his time, and it is very difficult for him to make a visit at a certain time. The business man should not expect his doctor to time his call at the noon hour when the former can leave his business and be at home. If he cannot consult the doctor during office hours, he should go home and remain there until the doctor can come to see him.

5. Do not ask the doctor to come immediately when it is not necessary. Such a visit, being an emergency visit, is combined with great inconvenience and loss of much time, as it interferes with other work. At the same time, other patients who should be visited first are slighted thereby.

6. Never call the doctor at night except in an emergency case. The doctor is human, and like every other man must have his rest. A tired, worried and overworked doctor, one who is frequently disturbed in his sleep, naturally cannot render such efficient service to his patient as he could if his rest were not broken so much.

7. On Sunday the doctor should be allowed to rest. No demand should be made on his time, except when his services are absolutely needed.

8. If a doctor is needed to answer an emergency call, please do not notify more than one man at the same time. If, in the confusion of the moment, more than one doctor has been called, countermand multiple calls as soon as possible.

9. When the doctor is expected, please have everything ready for him so that time will not be lost. Above all things, do not expect the doctor to wait to see you, but have your room and yourself in readiness to receive him. Have water, soap and towel in readiness for him, likewise pen and ink and anything else that might be needed by him, to avoid delay.

10. Do not detain the doctor unnecessarily during his office hours. Other patients are waiting to see him, each in his turn, and lost time may be a valuable item for them. Furthermore, other patients are awaiting the doctor at their homes. Female patients should be prepared to submit to any examination with as little loss of time as possible, and be so dressed that they can leave the office quickly and without the assistance of a maid.

PARIS LETTER

PARIS, Oct. 7, 1915.

The War

THE OPERATION OF THE MEDICAL SERVICE DURING THE RECENT BATTLES

M. Justin Godart, assistant secretary of the medical service in the war department, has gone to inspect the working of the measures adopted to assure the rapid transportation and the suitable distribution of the wounded after the recent battles of Champagne and Artois. In an interview he said that on the battlefield automobiles have been multiplied and have come up to the first aid posts whenever this was possible. The sojourn of the wounded on the field has been reduced to the minimum. By agreement with the railway companies, the average speed of the medical service trains has been from 30 to 45 kilometers (from about 18½ to about 28½ miles). Moreover, these trains have not remained more than an hour at the stations. The wounded have arrived in Brittany twenty-four hours after the receipt of their wounds; in Paris fourteen hours after; in Fontainebleau sixteen hours.

M. Godart declared that many operations had been performed in surgical automobile ambulances under excellent conditions. As things are, however, it seems that these ambulances play an ill-defined rôle. When kept moving too exclusively, they do not render sufficient service; when left in one spot they merely duplicate the service of the fixed ambulance units. Something else is required: operation and sterilization rooms, without surgical staff, coming to the aid of incumbered units.

The assistant secretary finds the general hygienic conditions excellent. Tetanus has almost disappeared. Gaseous gangrene has greatly diminished. The hygienic condition of the troops is equally good. Strict orders have been given for the removal of filth and refuse and its incineration, for the disinfection of buildings and for the suppression of flies. Soldiers in camp do not sleep directly on the ground, but always on raised beds of brush. The medical officers of the regiments are directed to obtain the cooperation of the municipalities for strict sanitation within municipal limits at all costs. Laundry wagons with driers permit the perfect cleansing of the soldiers' linen. Thanks to these measures, diseases which were so destructive in previous wars at present play an insignificant rôle.

SCHOOL BUILDINGS UTILIZED AS HOSPITALS

An arrangement has been concluded between the minister of public instruction and the assistant secretary of the medical service by which a certain number of school buildings, utilized up to the present as hospitals, have been or soon will be restored to their use as schools. All these changes are being made with the sole design of reconciling the demands of the national defense and the welfare of the wounded with the interests of education. In no region has the number of beds for the use of the wounded been diminished, the restoration of the school buildings having been made possible by the substitution of other buildings, the creation of new hospitals or the expansion of existing hospitals. The minister of public instruction has given specially definite orders for the disinfection of the buildings thus returned to normal use, so that the pupils may find them in perfect hygienic condition.

THE REPORT OF THE AMERICAN RELIEF CLEARING HOUSE

The semi-annual report of the American Relief Clearing House, of which I have mentioned the activities in previous letters (THE JOURNAL, Aug. 28, 1915, p. 213 and Sept. 18, 1915, p. 1042), has just been published.

The total number of boxes received by the central committee of the American relief, coming from all parts of the United States, exceeds 15,000. Of these, 1,500 are from the American Red Cross, of which the central American committee is the official representative in France. Among the other American organizations which have contributed are the Lafayette Committee of New York, which gave 750 boxes and bales, containing 25,000 outfits, or a total of 505,000 useful articles for the soldiers at the front; the American Girls' Aid Society, which gave 2,000 boxes, containing more than 100,000 pieces of clothing for the refugees; the American Commission of Aid for Belgium (the Hoover Commission) which gave 1,000 boxes of clothing; the War Relief Committee, which contributed 6,000 boxes and bales; the Vacation War Relief, which gave about 900 boxes; and so on without mentioning a large number of private donors. All these supplies have been transported from New York

to France without expense, thanks to the courtesy and generosity of the Compagnie générale transatlantique. The gifts, composed of the greatest variety of objects, represent an estimated value of 10,000,000 francs ($2,000,000). The supplies have been distributed directly by the central committee, with the aid of the French government, to more than 600 hospitals and medical institutions; to about 500 workshops and aid organizations of all kinds situated in all parts of France; also to the soldiers at the front. During one of the particularly active months of summer, there were sent to about fifty prefects about 62,000 pieces of clothing for the civilian population of their respective departments.

The American Central Committee, admirably seconded and counseled by its adjunct French, Belgian, Russian, Italian and Serbo-Montenegrin committees, whose members are the official representatives of their respective governments, foresees numerous and urgent needs springing from the coming winter campaign, and, with its correspondent organization at New York (The War Relief Clearing House for France and Her Allies), is preparing to send numerous new gifts and subscriptions from all parts of the United States.

INCREASE IN THE PRICE OF MILK

The report has lately been published in several journals that the milk supply of Paris is about to be cut off. This is not quite correct. Paris is still being supplied, but on certain days the milk arrives late, for the milk trains have had to yield the right of way to military trains. But, although milk is not going to be lacking in Paris, the price is without doubt going to rise. To supply a city the size of Paris, whose daily consumption amounts to about a million liters (over 250,000 gallons) of milk, a very complicated organization is required. Moreover, the scarcity of labor in the country, the increase in the price of fodder, the sale of a large number of cattle for slaughter, the high price at which they sell and the fact that the dairy regions of the north are invaded—all this has tended to reduce the production and to increase the price of milk.

PERMANENT MISSION OF PROPHYLAXIS

By a decree of the minister of war, a permanent mission of prophylaxis in the zone of the interior has been created under the presidency of the assistant secretary of the medical service for the duration of the war. It comprises: Dr. Baillard, the medical inspector general; Dr. E. Roux, director of the Pasteur institute; Dr. Laveran of the Pasteur institute; M. Brissac, director of Public Charities and Hygiene in the interior department; Dr. Simonin, professor in the Ecole d'application de médecine et de pharmacie militaires du Val-de-Grâce; Dr. Pottevin, member of the Conseil supérieur d'hygiène publique de France.

DISTURBANCES OF THE ARTERIAL CIRCULATION IN RELATION TO WAR

At a recent session of the Académie des sciences, Dr. Moutier read an interesting paper on this subject. All persons whom Moutier has been able to observe after return from the battlefield since the beginning of the campaign present a radial hypotension. In all, the radial tension falls rapidly from the normal 15, to a very inferior figure, which generally varies between 7 and 10. In subjects who before their departure present generalized hypertension, the return of the radial tension to normal is observed, or even, more frequently, a lowering to below normal. This radial hypotension is the consequence of a peripheral vasodilatation, dependent on and compensatory to an internal vasoconstriction. By applications of d'Arsonval high frequency currents locally applied at the abdomen, the arterial circulation is regularized and the radial tension becomes normal again.

Disturbances of arterial circulation are frequently observed at the region of a limb which has sustained a traumatism of war, when they are not observed in the limb on the opposite side. This is manifest when the lesion is in an arm. In the latter case in the injured limb one finds a tension different from that in the uninjured limb; sometimes the tension is higher, but more frequently it is lower; the radial pulse in certain cases may even be imperceptible. A return to normal is observed not only as a result of a local abdominal application, but also after a local high-frequency application at the level of the junction of the limb.

Moutier believes that these disturbances of arterial circulation may have considerable influence on the course and perhaps even on the production of many diseases and complications observed in victims of war (frozen feet, certain atrophies, and retardation of cicatrization or of osseous consolidation).

Marriages

Charles Alexander Balkwill, M.D., Grafton, Wis., to Miss Emma Marie Pinkham of Hillsdale, Mich., October 12.

Lucius Boardman Morse, M.D., to Mrs. Margaret Shepperd Kemper, both of Hendersonville, N. C., October 7.

Eben Wesley White, M.D., Castle Rock, Wash., to Miss Elinor Mae Hibbard of Walla Walla, Wash., October 5.

Alan Richard Welch, M.D., Smithfield, Ill., to Miss Mabel Lee Hinckle of Hinckle, Va., at Cuba, Ill., October 11.

John George Breslin, M.D., Charlestown, Boston, to Miss May Evelyn Taber of Dorchester, Boston, October 6.

Wallace William Smith, M.D., Springfield, Mo., to Carlie Bell Souter, M.D., of Chicago, October 14.

William Gilliam Kennon, M.D., to Miss Elizabeth Thompson, both of Nashville, Tenn., October 12.

Wilbur Paul Rickert, M.D., East Millville, N. J., to Miss Bertha Watkins of Vineland, N. J., recently.

Simon Eugene Driskell, M.D., Alachua, Fla., to Miss Ethel Jones of Jones' Mill, Ala., June 17.

John Hamilton Taylor, M.D., to Miss Jessie Schucraft, both of Chattanooga, Tenn., October 12.

Albert Abrams, M.D., to Mrs. Blanche Schwabacher, both of San Francisco, September 28.

Frederick Johnson Corey, M.D., to Miss Ethel Henninger, both of Havana, Ill., October 6.

Theodore B. Templin, M.D., Gary, Ind., to Miss Gladys Ohbano of Chicago, October 2.

Percy Raymond Pierson, M.D., Readstown, Wis., to Miss Madge E. Starr, September 27.

Curtis Clyde Eves, M.D., to Miss Glodean Smith, both of Philadelphia, October 16.

Horace Gray, M.D., Boston, to Miss Katherine Meeker of Chicago, October 16.

Deaths

John C. Price, M.D. University of Pennsylvania, Philadelphia, 1893; aged 44; a Fellow of the American Medical Association; formerly roentgenologist to the State Hospital, Northern Anthracite Coal Region and Moses Taylor Hospital, Scranton, Pa.; chief medical inspector of the Division of Hygiene and Engineering of the Department of Labor and Industry of the State of Pennsylvania, Harrisburg; a specialist on vocational diseases; died at his home in Camp Hill, Harrisburg, October 13, from nephritis.

James Benjamin Shepherd, M.D. Jefferson Medical College, 1855; aged 81; surgeon of the Fifth Virginia Cavalry, C. S. A., during the Civil War; since 1870, a resident of Texas; physician and surgeon to the Texas Military Institute, Austin; and later assistant superintendent to the State Insane Hospital in that city; for thirty-four years a resident of San Antonio; died at his home in Alamo Heights, San Antonio, October 11.

Wallace Ernest Parkman, M.D. University of California, San Francisco, 1896; aged 41; of San Jose, Calif.; a member of the Association of Military Surgeons of the United States; for ten years acting assistant surgeon, U. S. Army, with service in the Philippine Islands, during which he was a member of the squad which captured Luis Aguinaldo; died at the Garden City Sanitarium, San Jose, October 5, from chronic nephritis.

William Noyes, M.D. Harvard University Medical School, 1885; aged 58; a member of the Massachusetts Medical Society, American Neurological Association and American Medico-Psychological Association; formerly superintendent of the Boston Insane Hospital and clinical instructor in mental diseases in Harvard Medical School; died at his home in Jamaica Plains, Boston, October 20.

Elmer Ellsworth Ferguson, M.D. Rush Medical College, 1897; from 1900 to 1912 proprietor and chief surgeon of The Dalles Hospital, but for two years a resident of Hood River, Ore.; died at his summer home, October 11, from a gunshot wound of the heart, self-inflicted, it is believed, with suicidal intent while suffering from melancholia.

Samuel Gordon Todd, M.D. Trinity Medical College, Toronto; Queen's University, Kingston, Ont., 1890; aged 46; a Fellow of the American Medical Association and American Academy of Ophthalmology and Oto-Laryngology; of Oshkosh, Wis.; a well-known specialist on diseases of the eye, ear, nose and throat; died at his home in Oshkosh, October 13, from pneumonia.

Andrew J. Smith, M.D. Central College of Physicians and Surgeons, Indianapolis, 1886; aged 83; who served in the United States Navy during the historic trip of Commodore Perry to Japan and was later an assistant surgeon in the Army with Civil War service; a practitioner for more than half a century; died at his home in Indianapolis, October 15, from cerebral hemorrhage.

George W. Daniels, M.D. Kentucky School of Medicine, Louisville, 1877; aged 67; a member of the Indiana State Medical Association; a veteran of the Civil War, and president of the Regimental Association of the One Hundred and Twenty-Third Indiana Volunteer Infantry; until two years ago a resident of Sweetsers, Ind.; died at his home in Marion, Ind., October 8.

Ethbert B. Emory, M.D. Homeopathic Hospital College, Cleveland, 1881; aged 66; a Fellow of the American Medical Association and an esteemed practitioner of Winfield, Kan.; died in his sanatorium in that city, October 13, from the effects of an incised wound of the throat, self-inflicted, it is believed, with suicidal intent, while despondent and of unsound mind.

Lewis Attwood, M.D. Kansas Medical College, Topeka, 1904; aged 36; of Topeka, Kan.; a specialist on diseases of the eye, ear, nose and throat; formerly a practitioner and druggist of Meriden, Kan.; was instantly killed October 16, when a Union Pacific motor car on the Blue Valley branch plunged through a bridge into a flooded creek near Randolph.

Adolph Kessler, M.D. University of Berlin, Germany, 1855; aged 82; a member of the Medical Society of the State of New York; formerly a member of the board of coroners of New York County and assistant sanitary superintendent of the Board of Health of the Bronx; died at his home in New York City, October 19, from senile debility.

Homer G. Newton, M.D. New York University, New York City, 1863; aged 79; one of the founders of the Brooklyn Eye and Ear Hospital, and an early ophthalmologist and otologist of Brooklyn; surgeon of U. S. Volunteers during the Civil War; died at his home in Shelburne, N. Y., October 11.

John Leon Parker, M.D. University of Michigan, Ann Arbor, 1899; aged 44; consulting surgeon to the Charles City (Iowa) Hospital; local surgeon of the Illinois Central Railroad and a member of the board of Education of Charles City; died suddenly in his office in Charles City, October 14.

John Marshall Kellogg, M.D. College of Physicians and Surgeons in the City of New York, 1868; aged 75; for many years a practitioner of Orange, N. J., but later connected with a preparatory school in New York; died at his home in East Orange, N. J., October 18, from cerebral hemorrhage.

Warren David Kleppinger, M.D. Medico-Chirurgical College of Philadelphia, 1913; aged 26; a Fellow of the American Medical Association; chief of the house staff and pathologist of the Allentown (Pa.) Hospital; died in that institution, October 9, from carcinoma of the pancreas.

Calvin Brice McKeown, M.D. Medical College of the State of South Carolina, Charleston, 1878; aged 63; a member of the South Carolina Medical Association; until three years ago a practitioner of Fort Lawn, S. C.; died at his home in Chester, S. C., October 11.

John D. Jordan, M.D. University of Louisville, Ky., 1872; aged 69; a member of the Arkansas Medical Society; formerly president of the board of education and a well-known physician and druggist of Eureka Springs, Ark.; died at his home in Antlers, Okla., October 7.

Herbert Augustine Morse, M.D. University of Michigan, Ann Arbor, 1866; aged 70; formerly a Fellow of the American Medical Association; for many years a practitioner and druggist of Batavia, N. Y.; died at his home in that city, October 15, from angina pectoris.

James P. Frame (license, Missouri, 1883), aged 78; formerly president of the Lewis County (Mo.) Medical Society and president of the Bank of Ewing, Mo.; a veteran of the Civil War; died at his home in Ewing, October 2, from diabetic gangrene.

Stanislas Alcide St. Amour, M.D. Ecole de Médecine et de Chirurgie, Montreal, 1886; aged 52; of Chebovgan, Mich.; a member of the Michigan State Medical Society; died in St. Luke's Hospital, Chicago, October 19, from cerebral hemorrhage.

Edmond G. Scruggs, M.D. Medical College of Georgia, Augusta, 1858; aged 84; formerly a member of the Medical Association of Georgia; a practitioner and druggist of Warrenton, Ga.; died at his home in that place, August 15, from nephritis.

Benjamin F. Hall, M.D. Louisville (Ky.) Medical College, 1877; aged 62; of Rock Island, Ill., and Davenport, Iowa; a specialist on diseases of the eye, ear, nose and throat; died in the Augustana Hospital, Chicago, October 17.

George Haner, M.D. New York University, New York City, 1877; aged 67; formerly a member of the Medical Society of the State of New York; died at his home in Farmersville, N. Y., July 2, from cerebral hemorrhage.

William Miller Baird, M.D. Bellevue Hospital Medical College, 1877; aged 66; of Atlanta, Ga.; formerly a member and speaker of the house of representatives of New Jersey; died at the home of his son in Baltimore, October 10.

Nathaniel Cope Miller, M.D. University of Pennsylvania, Philadelphia, 1870; aged 67; a Fellow of the American Medical Association; died suddenly at his home in Stroudsburg, Pa., about October 10, from disease of the kidney.

George W. James, M.D. University of Nashville, Tenn., 1867; aged 74; a Confederate veteran, for many years a practitioner of Humboldt, Tenn.; died while making a professional call in that place, October 14.

William John McNaul, M.D. Jefferson Medical College, 1894; formerly a Fellow of the American Medical Association; for twenty years a practitioner of Kensington, Philadelphia; died at his home, October 15.

George W. Crosby, M.D. Missouri Medical College, St. Louis, 1870; aged 69; formerly a member of the Arkansas Legislature and a practitioner of Heber Springs; died at his home in that place, about October 14.

Samuel W. Craig, M.D. Cincinnati College of Medicine and Surgery, 1869; aged 74; a veteran of the Civil War; for thirty years a druggist of Cincinnati; died at his home in Mt. Auburn, Cincinnati, October 4.

John W. Williams, M.D. University of Louisville, Ky., 1887; aged 62; a member of the Kentucky State Medical Association; died at his home in Clay City, Ky., October 13, from carcinoma of the stomach.

Thomas Jefferson Box, M.D. Tulane University, New Orleans, 1891; aged 59; formerly a Fellow of the American Medical Association; died at his home in Torras, La., July 4, from heart disease.

David Henry Van Nuys, M.D. Jefferson Medical College, 1864; aged 81; for fifty-one years a practitioner of Falmouth, Ind.; died at his home in Anderson, Ind., October 15, from bronchial pneumonia.

Gentry Guy Fisher, M.D. University of Nashville, Tenn., 1909; aged 27; formerly of Dibrell, Tenn.; of Bokchito, Okla.; died at his home in that place, October 10, from typhoid fever.

Lawrence Orr McCalla, M.D. College of Physicians and Surgeons, Baltimore, 1893; aged 52; a retired practitioner of Starr, S. C.; was shot and killed by his wife's nephew, October 9.

Simeon King Fisher, M.D. University of Louisville, Ky., 1884; aged 61; a member of the Kentucky State Medical Association; died at his home in Milton, Ky., June 25, from diabetes.

Edouard Tourigny, M.D. Laval University, Quebec, 1904; aged 42; of Aurora, Kan.; died at St. Albert, Warwick Parish, Quebec, Canada, July 13, from pulmonary tuberculosis.

John David Shepherd, M.D. College of Physicians and Surgeons, Keokuk, Iowa, 1887; aged 67; died at his home in Meadville, Mo., August 11, from general nervous breakdown.

Willard Knowlton Dyer (license, Massachusetts, years of practice, 1894), aged 64; a practitioner of Boston for thirty-two years; died in a hospital in Boston, October 18.

William Beatty, M.D. University of Toronto, Ont., 1880; aged 65; for nearly thirty-five years a practitioner of Dunlap, Iowa.; died at his home in Omaha, October 13.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

"LOCAL INDUSTRIES AND THE SOFT PEDAL"

The following letter from Mr. Roland B. Woodward, Secretary of the Rochester (N. Y.) Chamber of Commerce, reached THE JOURNAL office October 14. It was dated September 15, but bore the Rochester postmark of October 13. Mr. Woodward, in answer to an inquiry, hopes that THE JOURNAL will "find it worthy of publication."

"*To the Editor*:—In 'Medical News,' Volume LXV, Number 11, page 961, top of the page and second column, you have an editorial comment on an incident connected with an address on 'Patent Medicine Frauds,' before the meeting of the American Public Health Association in Rochester.

"It seems to me that the article is in bad taste and is thoroughly unfair in its suggestion. You say: 'Doubtless it was this spirit that a few years ago inspired the Secretary of the Chamber of Commerce of Rochester,' *et cetera*. You do not say *how many* years ago; neither do you name the Secretary of the Chamber of Commerce of Rochester; neither do you point out that the letter written by John M. Ives, who was (then) the Secretary, although written on the Chamber of Commerce letter-head, was signed by him as an *individual* and not as Secretary of the Chamber.

"I have served as Secretary of the Rochester Chamber for nearly seven years — which is more than 'a few years.' The inference to be drawn from your comment is that the *present* Secretary of the Chamber of Commerce of Rochester wrote the testimonial representing the Chamber, in order to not 'hurt local industries, no matter how fraudulent, how subversive of the public good, how dangerous to the public health, so long as the industry brings money to the town.' You evidently don't know the Rochester Chamber of Commerce nor the City of Rochester.

"What I have said concerning the Secretary of the Chamber of Commerce may apply equally to the 'Postmaster of Rochester,' and, so far as I know, to 'the President of the Rochester Herald Company.'

"It is such editorials as yours, expressing half-truths, permitting of wrong inferences and endeavoring to slander an entire community, which make honest men hesitate to align themselves with an association or organization that, in its opposition to what it deems an evil, loses its sense of fairness and sanity."

The editorial comment to which Mr. Woodward refers appeared in THE JOURNAL for September 11 under the title "Local Industries and the Soft Pedal." It is to be regretted that this comment strikes Mr. Woodward as "in bad taste" and "thoroughly unfair in its suggestion." After going over the matter with a good deal of care and giving due weight to Mr. Woodward's criticism, THE JOURNAL still remains unconvinced that it has done either the City of Rochester, the Rochester Chamber of Commerce, or its secretary any injustice. One statement in Mr. Woodward's letter is, evidently, based on a misconception of the facts:

". . . neither do you point out that the letter written by John M. Ives, who was (then) the Secretary, although written on the Chamber of Commerce letter-head, was signed by him as an *individual* and not as Secretary of the Chamber."

The facts: Mr. Ives' letter was written to a Mr. Phillips in reply to a question which Mr. Phillips *asked, not of Mr. Ives, but of the Rochester Chamber of Commerce*, about the fraudulent "New York Institute of Science." The "New York Institute of Science" not only reprinted Mr. Ives' letter as an endorsement, but emphasized the fact that this letter represented the views of the Chamber of Commerce rather than the views of a private individual by adding:

"The Rochester Chamber of Commerce looks after the interests of the City of Rochester, and its Secretary would not prepare such a letter in favor of any firm engaged in a business questionable in any sense."

In view of the above facts, THE JOURNAL was certainly justified in assuming that a letter written by the Secretary of the Chamber of Commerce, on the stationery of the Chamber of Commerce, in answer to an inquiry addressed to the Chamber of Commerce, represented the views of the Secretary of the Chamber of Commerce. Mr. Woodward says further that what he has mentioned regarding the Secretary of the Chamber of Commerce may apply equally to the "Postmaster of Rochester," and, so far as he knows, also to the "President of the Rochester Herald Company." Once more, the facts: The letter reproduced by the "New York Institute of Science" was written on the stationery of the "Main Post Office of Rochester, N. Y.," and was signed "J. S. Graham, Postmaster." Likewise the letter from the President of the Rochester Herald Company that the "institute" reproduced in its advertising was written on the stationery of the *Rochester Herald* and signed "The Rochester Herald Co., John David, Pres."

Mr. Woodward's statement that we "evidently do not know the Rochester Chamber of Commerce nor the City of Rochester" may be true. We do know, however, that for years two of the most widely exploited and fraudulently advertised "patent medicines" in the country have emanated from the City of Rochester, and we understand that the fortunes amassed from the sale of these products are, today, invested extensively in other Rochester projects. We know, further, that for many years Rochester has been the headquarters of a syndicate of fraudulent mail-order concerns that have fleeced people not only of the United States, but all over

"NO HINGE NOR LOOP TO HANG A DOUBT ON."

WE ARE RESPONSIBLE

WHY HESITATE?

Five Hundred Thousand Satisfied, Successful Pupils

NEW YORK INSTITUTE OF SCIENCE, Rochester, N. Y., U. S. A.

A reduced facsimile of a sheet, three square feet in size, sent out by the New York Institute of Science, in its attempt to impress the public with its responsibility and honesty. It contained reproductions of four letters written in 1903. One was from the president of the Rochester *Herald*, who states that the "Institute of Science and its officers" are "of irreproachable integrity." The cashier of the Flour City National Bank, Walter B. Duffy, President, testifies that the bank's dealings with the New York Institute of Science "have always been satisfactory." The secretary of the Rochester Chamber of Commerce defended this fraudulent concern by stating that it employs 350 people, uses more than $1,000 worth of postage stamps each week and "pays its bills promptly." The fourth letter, from the postmaster of Rochester, praised the "institute" and stated that he was convinced that the institute "gives its customers whatever is just and due." The New York Institute of Science, commenting on the postmaster's letter, says: "Do you think that a postmaster, whose business it is to investigate postal affairs and prosecute frauds, would express his satisfaction concerning our business if it were conducted on a fraudulent basis and there existed the least doubt concerning the reliability of the institute?"

the world. Fraud after fraud has been started by this syndicate, flourished rankly and has gone out of existence only when the accumulated experience of the public has nullified the power of its advertising or when the United States Post Office Department has issued a fraud order against it and denied it the use of the mails. What has Rochester done about it?

LAIRD'S RHEUMATISM FORMULA

During the past week or two, physicians in various parts of the country received a circular letter from one Madison R. Laird, Des Moines, Iowa. Mr. Laird's specialty, as indicated by his letterhead, is "Investments." Possibly Mr. Laird may have found the medical profession somewhat susceptible to inducements that are sometimes held out by those in his line of business. At any rate, he came to the profession, *via* the circular letter, with an offer to sell a prescription for "rheumatism" that was "really amazing" in the "prompt results" to be obtained:

"*Dear Doctor*:—HAVE YOU A PRESCRIPTION THAT REALLY DOES GIVE RELIEF FOR YOUR CASES OF RHEUMATISM?
"If you have not, please read this carefully.
"For some time I have known of a prescription that is particularly efficient and reliable for the treatment of rheumatic ailments, being especially effective and prompt in rheumatic fever. . . ."

And much more to the same effect. Mr. Laird claimed that he had used it himself "for rheumatism and lumbago" and obtained "complete and almost immediate relief." Also, he confided, some of his relatives "have found it equally effective." In spite of his firm faith in the power of his remedy and his apparent belief that the medical profession had nothing as good to offer suffering humanity, Mr. Laird was, it seemed, unwilling to give the public the benefit of his "secret" but was perfectly willing that physicians should give the public the benefit of it—after Laird had been paid for it!

"Believing this valuable prescription should be known to every doctor, I have decided to sell it to as many as care to send for it.
"I will send you this prescription, with full directions, for $2.00."

One of the physicians who received the Laird circular and sent it in to THE JOURNAL was Dr. W. L. Wilson of Hinsdale, Ill. Dr. Wilson was asked to cooperate with THE JOURNAL in giving the profession and the public the benefit of Madison R. Laird's marvelous prescription to the extent of sending Laird his check for $2.00, for which THE JOURNAL would reimburse him. This Dr. Wilson did and in due time sent both the "prescription" and a letter he received from Laird to the Propaganda Department generously stating that he is "glad to contribute the $2.00 to the cause of advancing the department's work." The "rheumatism formula" was a typewritten affair and disclosed a typical, old-time, shotgun prescription of the polypharmacy period; probably the old prescription-files of half the drug stores in the country contain similar monstrosities. Here it is:

Compound Syrup Sarsaparilla	2 ounces
Wine of Colchicum Seed	1 ounce
Tincture Guaiac	1 ounce
Potassium iodid	120 grains
Sodium Salicylate	60 grains
Rochelle Salts	1 ounce
Water	4 ounces

COMPOUNDING.—Dissolve the dry ingredients in the water. Mix liquids separately, adding Tincture Guaiac last. Combine the two mixtures, shaking well together.

DIRECTIONS.—Shake well before taking. One teaspoonful in half glass of water three times daily, before or after meals.

Accompanying this marvelous "formula" was a letter to Dr. Wilson in which Laird said:

"I wish to thank you for your letter; it is one of a very few I have received. [A compliment on the profession's intelligence.—EDITOR.] Several of the others have been 'roasts' of a sarcastic or amusing character. Some of these learned men have actually been insulted to receive such a proposal from a 'layman.'"

Laird further said that for years he had "been an interested reader of medical subjects, and for a layman have a very good knowledge of medicine." He also modestly acknowledged that his "long service as a civil engineer and contractor" had made him "a very good first aid surgeon." The letter closed with a description of the marvelous results obtained from the use of this formula in a case of tabes.

"Six months ago this man was almost helpless from Locomotor Ataxia, could hardly walk, did not dare raise his eyes above the level and was entirely lost in the dark, could not find his way home after nightfall."

After using Laird's "rheumatism" medicine:

". . . he reported that he could go anywhere he pleased day or night without getting lost and the dizzy symptom had entirely disappeared. He has wonderfully improved mentally and bodily and is entirely another man."

The lesson this anecdote conveys to Mr. Laird is, "We sometimes stumble on facts that surprise us and this is one of them." How true! Equally axiomatic it is that we sometimes stumble on fancies that amuse us—and this is one of them.

Correspondence

The Proper Preparation of Food, and the Proposed Founding of Training Schools for Cooks in Connection with Established Medical Colleges

To the Editor:—A letter written by me to a medical journal, dated May 4 last, which discussed the question of human alimentation and proper food preparation in public places, brings up a question of vital concern and therefore appropriate for careful consideration in the ultimate hope that there may be brought forth a generation of cooks fitly prepared by scientific training for their important work. The suggestion was made that the training schools for nurses, and the revolution thus wrought in that line of work, furnished a fair parallel to what was possible in the dietary and culinary service rendered to the public in hotels, clubs, restaurants and the like, and that adequately equipped medical colleges should undertake to provide this educational and dietetic service.

The contention in the letter named was that the physical aspect of people, as seen in city streets, supports the view that there is something wrong in the general manner of food preparation by public caterers, and a single paragraph of this letter will be quoted in illustration:

Stated generally, the appearance of the crowd in the street tends to confirm this view, not one in five looking either healthy or happy. The facial complexions of persons of all ages and conditions—anemic, chlorotic, icteric, cachectic, in many forms and every degree—would be shocking if not so common as scarcely to arouse comment, and seem to point to a deeply rooted cause or causes operating adversely at the very basis of nutrition and producing effects that are ultimately recognizable by observing medical men in profound disorders of the entire digestive and assimilative tract; among which may be named dyspepsias and diarrheas, indigestion, intestinal inertia, cancers and constipation, hepatitis, appendicitis, colitis and the like.

In THE JOURNAL, May 22, 1915, Graham Lusk discussed the preparation, proper proportioning and serving of foods, especially in connection with a catering concern that has a chain of such establishments in all large cities in this country; and while it may be said that the calories computation is perfect on paper, yet in actual everyday working the ignorance, inadequacy or inadvertence of the cook will nullify every provision, and this conclusion has been reached only after repeated patronage tests of the establishments belonging to the system that is operated in this city.

My criticism of the local catering concern in question would be directed toward the methods of handling the starches served, the half-baked breads and pastries and poorly cooked vegetables—the meats, stews, soups, etc., being as a rule better cooked but often spoiled by overseasoning.

In reply to an inquiry by me as to the possible remedy, Lusk said:

I think that instruction along proper food lines might be taken up by the dispensaries of medical schools. The medical schools, however, could in my judgment scarcely establish schools of cooking; that should be a part of the curriculum of every public school. I remember in the course in the School of Mines at Columbia which I took you work with small cupel furnaces assaying ores during a period of four months,

giving knowledge which never can be forgotten. It seems to me that cooking schools of the public schools might be associated with municipal lodging houses and the product of such cooking schools could be sold at very nearly cost. Every girl should be taught how to prepare simple foods in a cleanly and proper manner, with full regard for the nutritive value of the article involved.

The public bread supply in St. Louis is a palpable reproach in respect of both integrity and decency; when fraud in half-baking, short-weight or loading the loaf with moisture is not in evidence, foul-fisted handling in delivery is to be seen in every direction. My suggestion would be that instead of the city government attempting to regulate the business of public bread production by legislative penalties, the better way would be for the city regularly to produce a loaf standardized in every respect of weight, quality, baking, price, etc., and by publication inform bread-buyers of those producers who fall below the standard in their goods, and if the people wished counterfeit stuff they would then buy with their eyes open. Years ago bread was baked at the poorhouse for the supply of other institutions that was of uniformly fair quality, and doubtless the same could be done again. In Canada the dominion government relies solely on publicity as a check on the sale and use of misbranded or adulterated goods that enter into household consumption by the inspectors making purchases in the open market; the results of analyses, special findings, etc., then being published, and a well-informed people soon learn to put the frauds out of business.

George Homan, M.D., St. Louis.

Transverse Incision in Operation for Appendicitis

To the Editor:—Since the publication of my paper on this subject (The Journal, Sept. 11, 1915, p. 939), my attention has been called to the fact that the incision at the outer side of the sheath of the rectus, which is an essential part of the transverse incision, was first proposed and described by Dr. Robert Weir in the *Medical News*, Feb. 17, 1900, p. 241. Dr. Weir proposed this as an extension of the McBurney incision, but described definitely the incision in both the anterior and posterior sheaths of the rectus, and the drawing of the rectus back into its sheath. I scarcely understand the mental process which caused me to omit giving Dr. Weir full credit for this important part of the procedure. Like many others, I had practically abandoned McBurney's incision, using chiefly the vertical incision, which is now, I believe, more used than any other. The transverse incision, with Weir's technic at the inner side, is destined by reason of its natural advantages, if properly studied and understood, to become the operation of choice.

A. E. Rockey, M.D., Portland, Ore.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

ODOR OF URINE IN PARALYSIS OF VESICAL SPHINCTER

To the Editor:—I have an incurable case of paralysis of the vesical sphincter, and I am anxious to give something to eliminate the foul odor of the urine in this case. What do you suggest?

W. Burnett Weaver, M.D., Miamisburg, Ohio.

Answer.—It is uncertain from the question whether the foul odor complained of is due to decomposition of the urine within the bladder from infection or simply to the decomposition of the urine after it escapes. In the former case it would be necessary to overcome the infection if possible, and it is difficult to give a definite line of treatment for a specific condition when the specific condition is not known. Hexamethylenamin in sufficient doses will prevent or rather retard the decomposition of the urine, provided the urine is of acid reaction, but it will have practically no effect on a foul decomposed alkaline urine, nor is there anything known which, taken by mouth, will entirely eliminate the foul odor in such conditions. If the urine is kept acid in reaction and hexamethylenamin given to delay its decomposition, by scrupulous cleanliness, the odor may be reduced to a minimum.

BOVINE AND HUMAN TUBERCULOSIS

To the Editor:—Will you direct me to the latest literature on bovine tuberculosis as it affects human beings?

E. R. Van der Slice, M.D., Kearney, Neb.

Answer.—The following is a list of references to articles on this subject:

Park, W. H., and Krumwiede, C.: Relative Importance of Bovine and Human Types of Tubercle Bacilli in Different Forms of Human Tuberculosis, *Jour. Med. Research*, December, 1911; ibid., September, 1912; abstr., The Journal, Jan. 27, 1912, p. 306; Oct. 5, 1912, p. 1322.

Establishment of the Exact Significance of Bovine Tubercle Bacilli in Human Disease, editorial, The Journal, Feb. 17, 1912, p. 482.

Eagle, R. T.: Tuberculous Cow, *Texas State Jour. Med.*, July, 1912.

Fraser, J.: Possible Test in Differentiation Between Human and Bovine Types of Tubercle Bacillus, *Brit. Med. Jour.*, Nov. 23, 1912; abstr., The Journal, Dec. 21, 1912, p. 2287.

Bertarelli, E.: Transmission of Bovine Tuberculosis to Man, *Gazz. d. osp.*, Nov. 26, 1912.

Bertarelli, E.: Italian Contributions to the Study of the Relations Between Human and Bovine Tuberculosis, *Gazz. d. osp.*, Dec. 1, 1912.

Keiller, V. H.: Relative Importance of Human and Bovine Tuberculosis Infections in Man, *Texas State Jour. Med.*, December, 1913.

Wankel, J.: Differentiation of Human and Bovine Tuberculosis by Means of Theobald Smith's Reaction Curve, *Deutsch. med. Wchnschr.*, Dec. 11, 1913.

Calmette, A.: Rôle de la tuberculose bovine dans la contamination de l'homme; la question du lait, *Ann. de med.*, Paris, 1914, i, 253.

Ravenel, M. P.: Bovine Tuberculosis, *Illinois Med. Jour.*, June, 1914.

Raw, N.: Human and Bovine Tuberculosis: Treatment by Special Kinds of Tuberculin, *Jour. State Med.*, July, 1914; abstr., The Journal, July 25, 1914, p. 354.

McCleave, T. C.: Relation of Bovine Tuberculosis to Early Tuberculosis in Children, *Am. Jour. Dis. Child.*, September, 1914, p. 210; abstr., The Journal, Sept. 26, 1914, p. 1135.

Beitzke, H.: Fatal Case of Bovine Tuberculosis in Man, *Berl. klin. Wchnschr.*, Aug. 17, 1914; abstr., The Journal, Oct. 3, 1914, p. 1239.

Brooks, H.: Effects of Heredity in Bovine Tuberculosis, *Am. Jour. Med. Sc.*, November, 1914.

BRAN BREAD

To the Editor:—Heretofore I have been inclined toward constipation. Recently I have been eating bran bread, which helps considerably. Can you give me the formula for making this bread? Please omit name.

X. Y., Fort Wayne, Ind.

Answer.—The following is suggested for bran bread: Prepare the two following mixtures:

2 cups of wheat flour
2 cups of graham flour
2 cups of bran flour
1 teaspoonful salt
½ cup sugar
1 level teaspoonful baking powder

2 cups milk
1 cup molasses
1 egg
2 level teaspoonfuls of soda
¼ cup hot water
1 cup raisins

Thoroughly mix the foregoing liquid and solid mixtures, and bake in a moderate oven for one hour. This makes two loaves.

THE DOCTOR'S BAG

To the Editor:—Some time within the past two years I saw an article in The Journal regarding a list of articles which the general practitioner should carry in his bag in order to make a diagnosis. Can you give me any reference to it?

H. Bryan, M.D., Shanghai, China.

Answer.—The article is entitled "The Doctor's Bag," published in the Miscellany department of The Journal, Feb. 27, 1915, p. 767.

REFERENCES TO RHUS

To the Editor:—I am doing a little research work on the rhus group, including sumach, ivy, etc. Can you direct me to the literature on the subject?

J. A. Van Der Hulse, M.D., Akron, Ohio.

Answer.—A very complete bibliography on the poisonous species of rhus, by L. E. Warren, will be found in the *Midland Druggist and Pharmaceutical Review*, 1910, xliv, 149, 218 and 288. Since then Dr. von Adelung has published an important paper in the *Archives of Internal Medicine*, February, 1913, p. 148.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ARKANSAS: Regular, Little Rock, November 9-10. Sec., Dr. T. J. Stout, Brinkley. Homeopathic, Little Rock, November 11. Sec., Dr. Scott C. Runnels, 900 Scott St., Little Rock.

CONNECTICUT: Regular, New Haven, November 9-10. Sec., Dr. Charles A. Tuttle, 196 York St., New Haven. Homeopathic, New Haven, November 9. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven. Eclectic, November 9. Sec., Dr. T. S. Hodge, 19 Main St., Torrington.

FLORIDA: Jacksonville, December 7-8. Sec., Dr. E. W. Warren, 102 Front St., Palatka.

KENTUCKY: Louisville, December 7-9. Sec., Dr. A. T. McCormack, Bowling Green.

LOUISIANA: New Orleans, December 2-4. Sec., Dr. E. L. Leckert, 716 Macheca Bldg., New Orleans.

MAINE: Portland, November 9-10. Sec., Dr. Frank W. Searle, 776 Congress St., Portland.

MASSACHUSETTS: Boston, November 9-11. Sec., Dr. Walter P. Bowers, Room 159 State House, Boston.

NEBRASKA: Lincoln, November 10-11. Sec., Dr. H. B. Cummins, Seward.

NEVADA: Carson City, November 1. Sec., Dr. Simeon L. Lee, Carson City.

OHIO: Columbus, December 7-9. Sec., Dr. George H. Matson, Columbus.

SOUTH CAROLINA: Columbia, November 9. Sec., Dr. A. Earle Boozer, 1806 Hampton St., Columbia.

TEXAS: Dallas, November 9-11. Sec., Dr. M. P. McElhannon, Belton.

WEST VIRGINIA: Elkins, November 9. Sec., Dr. S. L. Jepson, Charleston.

Kansas June Report

Dr. H. A. Dykes, secretary of the Kansas Board of Medical Registration and Examination, reports the written examination held at Kansas City, June 8, 1915. The total number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 22, of whom 21 passed and 1 failed; 25 candidates were licensed through reciprocity. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Howard University	(1914)	82, 84
Rush Medical College	(1915)	89
University of Kansas	(1915)	81, 83, 85, 86, 86, 87, 88, 89, 89, 90
Kansas City Hahnemann Medical College	(1915)	77
John A. Creighton Medical College	(1915)	85
University of Oklahoma	(1915)	81, 81, 85, 86
Jefferson Medical College	(1912)	78
FAILED		
Kansas City Hahnemann Medical College	(1915)	*

College	Year Grad.	Reciprocity with
LICENSED THROUGH RECIPROCITY		
Chicago College of Med. and Surg.	(1911)	Illinois
Hahnemann Med. Coll. and Hosp., Chicago	(1899)	Iowa
Hering Medical College	(1909)	Illinois
National Medical College, Chicago	(1898)	Illinois
Northwestern University	(1911)	Illinois
University of Illinois	(1914)	Illinois
State Univ. of Iowa, Coll. of Med.	(1912)	Iowa
Hospital College of Medicine, Louisville	(1904)	Oklahoma
Kentucky School of Medicine	(1907)	Indiana
University of Louisville	(1910)	Missouri
Tulane University of Louisiana	(1913)	Louisiana
Medical School of Maine	(1910)	Maine
Barnes Medical College	(1909) (1911)	Missouri
Ensworth Medical College	(1911)	Nebraska
Kansas City Hahnemann Medical College	(1910)	Missouri
St. Louis Medical College	(1882)	Missouri
St. Louis University	(1913)	Illinois
University Medical College, Kansas City	(1913)	Missouri
Washington University, St. Louis	(1913)	Illinois
John A. Creighton Medical College	(1914, 2)	Nebraska
University of Nashville	(1882)	Missouri
Wisconsin College of P. and S.	(1905)	Wisconsin
University of Edinburgh	(1905)	Missouri

* No grade given.

District of Columbia July Report

Dr. Edgar P. Copeland, secretary of the Board of Medical Supervisors of the District of Columbia, reports the oral and written examination held at Washington, July 13-15, 1915. The total number of subjects examined in was 17; total number of questions asked, 80; percentage required to pass, 75. The total number of candidates examined was 30, of whom 22 passed and 8 failed. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Georgetown University	(1913)	78.7; (1915) 76.1, 83.5, 84.4, 87.6, 87.8, 88.5, 89.6.
George Washington University	(1912)	78.2; (1915) 78.2, 80.1, 81.8, 81.9, 82.7, 83.2, 84.5, 90.1.
Howard University	(1914)	78.8; (1915) 75.9
Johns Hopkins University	(1914)	89.3; (1915) 78.3
College of P. and S., Boston	(1905)	83.3
FAILED		
George Washington University	(1915)	72.2, 74.4
Howard University	(1914)	70, 72, 72.3
University of Michigan Medical School	(1894)	70.3
Fordham University	(1913)	72.3
University of Munich	(1912)	71.4

Book Notices

EDUCATIONAL HYGIENE FROM THE PRE-SCHOOL PERIOD TO THE UNIVERSITY. Edited by Louis W. Rapeer, Ph.D., Professor of Education, Pennsylvania State College. Cloth. Price, $2.50 net. Pp. 650, with illustrations. New York: Charles Scribner's Sons, 1915.

The rapid expansion of the general field of preventive medicine is well illustrated by the publication of this book, covering the entire subject of educational hygiene from the preschool period through the university. The amount of ground covered precludes the possibility of its preparation by a single writer. Professor Rapeer has therefore undertaken to act as editor, each chapter being contributed by a recognized authority. After an introductory chapter by the editor, the public health movement is discussed by Dr. E. H. Lewenski-Corwin, secretary of the Health Committee of the New York City Academy of Medicine; health and heredity by Dr. Davenport of the Carnegie Institution; home hygiene for children by Dr. Ernest B. Hoag of Leland Stanford Jr. University; rural school administration by W. I. Larson, state inspector of rural schools of Wisconsin; open air and open window schools by Sherman C. Kingsley, director of the Elizabeth McCormick Memorial Fund; rural school sanitation by A. C. Monahan of the United States Bureau of Education, etc. The result is a book of thirty-three chapters, each written by a specialist. As only eight of these chapters are prepared by physicians, the book presents the point of view of the educator rather than the sanitarian and should, for this reason, be especially valuable to physicians interested in school hygiene, as offering an opportunity to acquire the point of view of the educator. Of the six chapters on medical supervision of schools, only one, that on medical supervision of the exceptional child, is written by a physician, the other five presenting the point of view of the teacher, the psychologist and the trained nurse rather than that of the physician. The illustrations, charts and diagrams used are numerous and add materially to the value of the work. Some of this illustrated material might perhaps be omitted without injury. Inasmuch as many of the practical problems discussed are still in the experimental stage, however, it is perhaps better to be diffuse rather than dogmatic. In the present stage of development of school hygiene, this book will prove a valuable contribution to the literature of the subject.

THE BOOK OF THE FLY. A Nature Study of the House-Fly and Its Kin, the Fly-Plague and A Cure. By G. Hurlstone Hardy, with an Introduction by Halford Ross. Cloth. Price, 80 cents. Pp. 124, with illustrations. New York: Rebman Company, 1915.

One of the most important and far reaching developments of the modern scientific study of preventable diseases is the rôle of insects in the spread of disease. As a result, interest in the appearance, characteristics and habits of all insects which come in contact with man has been greatly stimulated. After centuries of close association with the common fly, we are just beginning to learn how little we know about him. Major Hardy's book is perhaps the most complete, from the standpoint of the naturalist, of anything that has so far been published. Evidently his interest in the subject has been lifelong, as the reader is told in the first chapter that, when barely more than 9 years old, he visited an aunt who was a veritable examplar of genteel breeding and propriety after the early Victorian pattern. She seriously reprimanded the child for cruelty in feeding the garden spiders with flies, which were, according to the aunt, "poor innocent creatures made by God for a useful purpose." To this admonition, the child replied that the devil made the flies and that God

made the spiders to eat them. While this may not be an adequate explanation for the existence of the flies, it at least accounts for the spiders.

The average reader will be surprised to know that there are in Great Britain nearly 3,000 species of flies, of which 200 are exceedingly common and widely distributed. The characteristics, habits and distinguishing peculiarities of the more important species are described, their dangers as disseminators of disease discussed, and various methods for their control and extermination proposed. While little new matter is brought out under the latter heads, the discussion of the different species, their appearance and the variation in their personal habits is interesting and instructive.

DESCRIPTIVE CATALOGUE OF THE MEDICAL MUSEUM OF MCGILL UNIVERSITY. Arranged on a Modified Decimal System of Museum Classification. Edited by Maude E. Abbott, B.A., M.D., Curator. Part 4, Section 1, The Hemopoietic Organs. Catalogue and Didactic Introductions by Oskar C. Gruner, M.D., Pathologist to the Royal Victoria Hospital, Montreal. Cloth. 1915.

McGill University has begun cataloguing the specimens in its large medical museum. A volume representing the portion of this catalogue on the hemopoietic organs has recently been received. Although it will be the fourth volume in the order of the museum classification, it is the first to appear in print. The book was arranged and edited under the personal supervision of Sir William Osler by the Oxford University Press, the cost having been met by funds raised by the medical alumni and friends of McGill University. The term "catalogue" scarcely does the book justice; it is more than that. In fact, it deals in a comprehensive manner with a subject which has not heretofore been attempted, and marks another step in the evolution of objective teaching. A series of specimens has been carefully selected illustrating each of the four subjects dealt with in this volume. For example, eighteen pages are devoted to conditions of bone marrow, thirty pages to lymph nodes, over 100 pages to the spleen and the splenic capsule and the balance of the book to the thymus gland. Each section is provided with a short introduction giving a brief review of the general pathology of the subject, which enables the reader to appreciate any departure from normal conditions. A number of blank pages after each subject have been allowed for subsequent additions. Altogether the book contains 203 pages and is illustrated by twelve elaborate plates. In the preparation of the book the author has carefully observed uniformity of arrangement, logical sequence of material, careful chronicling of macroscopic and microscopic details and a faithful coordination of clinical and pathologic data. Of particular value to those who are developing other museums is the elaborate scheme set forth in this book in numbering museum specimens, by which their proper classification is permitted. An examination of the book enables one to appreciate its great value in medical education, and it will be an important and useful addition to any medical library.

Miscellany

Government Reports on Wages and Hours of Labor

The Bureau of Labor Statistics in Bulletins 177 and 178 gives detailed analyses of wages and hours of labor in the hosiery and underwear industry, 1907 to 1914, and in the boot and shoe industry for the same period. These reports are of particular interest to physicians because of the relation of earnings and hours of labor to the health of the workers. The reports also give data on whole-time employment in these industries, which has an important bearing on questions of unemployment and the distribution of labor. In the underwear and hosiery industry it was found that the average full-time weekly earnings of the employees in 1914 were 2 per cent. higher than in 1913, 8 per cent. higher than in 1912, and 12 per cent. higher than in 1911 or 1910. The average full time hours of labor per week in 1914 were 1 per cent. lower than in 1913, 3 per cent. lower than in 1912, and 5 per cent. lower than in 1911 or 1910. The tendency, as will be seen, has been for wages to rise and for the hours of labor to become fewer. This affects to some extent the total earnings, and it was found that the increase in full time weekly earnings between 1910 and 1914 was not so great as in rates of wages per hour. The tables in the report set out all of this matter in detail. One table shows that in 1914 the average full time weekly earnings of males in ten occupations of the hosiery and underwear industry varied from $8.45 for certain lines of work to $22.31 as a maximum. The average full time weekly earnings of females for the same year in twenty-three occupations varied from $6.80 to $10.87.

In the boot and shoe industry the average full time weekly earnings in 1914 were the same as in 1913, 8 per cent. higher than in 1912, 6 per cent. higher than in 1911, and 9 per cent. higher than in 1910. The average full time hours of labor per week in 1914 were 1 per cent. lower than in 1913, 2 per cent. lower than in 1912, and 3 per cent. lower than in 1911 or 1910. The average earnings per hour for 1914 were 1 per cent. higher than in 1913, 9 per cent. higher than in 1912, 10 per cent. higher than in 1911, and 12 per cent. higher than in 1910. In this industry, as in that of the hosiery and underwear, owing to the reduction of hours, the increase in full time weekly earnings between 1910 and 1914 was not so much as in rates of wages per hour, thus affecting to some extent the total earnings. In 1914 the average full time weekly earnings of males in twenty-seven specific occupations varied from $15.37 to $27.68. In the same year the average full time weekly earnings of females in ten specific occupations varied from $9.12 to $13.14. On the whole, in both of the industries mentioned, the total earnings, notwithstanding the reduction in hours of labor, have been increased. It was found in eighty-three boot and shoe establishments in 1914 that the average loss of days during the year, aside from holidays, was eight days. No satisfactory comparison in this respect with other years is made on account of lack of data, the work of securing the information and many other considerations entering into the exact figures.

These reports indicate that in the cases of women employees the minimum wages are considerably below the amount considered by various investigation commissions in different parts of the country to be adequate for healthful and comfortable living, and the maximums mentioned do not much exceed the minimum requirements. In the cases of the men, the figures seem to be adequate, but, of course, do not take into consideration the fact that many wage earners are the heads of families in which there are a number of individuals depending on them for support of a kind which would insure sufficient nourishment, proper housing and living conditions to say nothing of provision for education or a few of the luxuries.

The Smoke Nuisance

O'Connor (*Popular Science Monthly*) remarks that the economic argument is the one commonly regarded as final on the smoke question. He thinks that a more powerful indictment may be drawn up under four heads, namely, the effect on (1) building materials, (2) meteorologic conditions, (3) vegetation and (4) health. 1. Apart from the soiling of surfaces, destructive of artistic effects from color contrasts, smoke helps to destroy stone and metal by the acid products of the combustion of coal. This action is especially marked on any stone containing calcium or magnesium carbonates. Metal work in a smoky city like Pittsburgh, moreover, lasts only half as long as in one free from smoke. 2. There are fewer hours of sunshine, and the sunshine is less intense in smoky cities than in those that are free from smoke. 3. Gases and smoke have an injurious effect on vegetation. Soot inhibits plant growth by the corrosive effect of the contained acid and also by blocking up the stomata and impeding transpiration, by coating leaves, thus reducing the intensity of sunlight and affecting the assimilation of carbon dioxid. 4. The results of medical investigators tend to show that

smoke greatly increases the incident severity and mortality of acute diseases of the air passages; pneumonia and bronchitis increase directly as smoke increases. The purification of the atmosphere should therefore receive the same attention as pure food and pure water are receiving, for it is just as important.

Infant Mortality in Bavaria

In spite of all the efforts made to lessen the infant mortality in Bavaria, the death rate is higher now than before. During 1914, 38,467 children under 1 year of age died, as against 36,805 during 1913. There were 21,570 male children and 16,897 female children. Of the children born in 1914, 19.3 per cent. died, as against 18.2 per cent. in 1913; 21 per cent. of the male children and 17.4 per cent. of the female children died. More than one-third of the children that died during the first year of life were not more than 1 month old. About one-half died before the end of the third month. Most of the deaths occurred during August and September. The highest infant mortality by percentages occurred in the smaller communities.

Medicolegal

The Power of a Trial Court to Order Physical Examinations

(State ex rel. Parmenter vs. Troup (Neb.), 152 N. W. R. 748)

The Supreme Court of Nebraska says that it is seldom that it is called on to determine a question of more importance or on which there is so clear and determined a difference of opinion among the courts of last resort in the several states, as that of the power of a trial court under any circumstances to order a party to submit his or her person to expert examination. The Supreme Court of the United States has been divided on the question, and has presented both sides of the controversy in an opinion and a dissenting opinion, the latter by Mr. Justice Brewer, and concurred in by Mr. Justice Brown. While the courts of last resort of nearly a dozen of the states of the Union have refused to indorse the reasoning of Mr. Justice Brewer, and have given reasons of undoubted force and clearness for such refusal, the courts of at least twenty of the states have reached his conclusion, in favor of the power in question.

Although the precise question here presented, whether the trial court has under any circumstances the power to order such an investigation, has perhaps never been directly and definitely considered and determined by this court, there are several cases in which expressions have been used that might be considered as indicating the opinion of the court as to the policy of the Nebraska law, and, since the case of Stuart vs. Havens, 17 Neb. 211, was decided thirty years ago, the trial courts have generally exercised such power. It has also been understood by the courts of other states that this court has decided that the trial courts have such powers, and their decisions class Nebraska among the states so holding. In view of this long-established practice in the state, and that there must otherwise often be a failure of justice, the court concludes that it should recognize this power of the trial courts. In other words, it is held that, in an action for damages caused by injuries to the person, the trial courts have power to order an expert examination of the person of the party injured, when the circumstances of the trial make it necessary to do so and no substantial harm can result therefrom. Such examination will not be ordered unless it clearly appears that a condition exists that can be definitely determined by such examination and cannot be satisfactorily determined without.

It is possible that, in some instances, a delicate and sensitive lady may suffer and endure a great wrong and injustice rather than present her cause for a public investigation to any court which would require her to allege in her petition and detail in her testimony facts in regard to the condition of her person which her sense of delicacy would forbid her doing. In such case she must elect, before bringing her action, whether she will bear the ills she has or fly to others that she knows not of. In bringing her action she must declare in public fashion the conditions to be investigated, and the law requires that in any legal investigation of facts the best evidence available must be produced. She may decline to present such conditions for investigation; but if she does bring them before the court, she cannot dictate the means of investigation by selecting such expert witnesses as she may have reason to suppose have opinions favorable to her cause, and rejecting those that might form contrary expert opinions on ascertaining the facts. In modern times the medical profession has the benefit of skilful women physicians, and ordinarily, other things being equal, such physicians ought to be preferred when reasonably practicable, if desired by the woman to be examined. If such an application is made for the purpose of embarrassing or coercing the plaintiff, the trial court will be quick to discover that purpose, and will order it only under conditions above indicated, and when it clearly appears that a condition exists that can be definitely determined by such examination and cannot be satisfactorily determined without it.

Sufficient Evidence of Promise to Pay for Operation

(Thomas vs. Boruff (Calif.), 148 Pac. R. 226)

The District Court of Appeal of California, Second District, affirms a judgment in favor of the plaintiff, a surgeon, who sued in his own behalf and as the assignee of another surgeon, a Dr. Southworth, for services rendered in performing an operation on one Henry Caystile, a brother-in-law of the defendant. The court says that the evidence tended to prove that, while Dr. Southworth had theretofore treated Mr. Caystile, he was not under employment by him at the time the operation was performed; that the defendant asked him to perform it, and the defendant, on being told by Dr. Southworth that the latter had spoken to Dr. Thomas regarding the matter, personally requested him to perform the operation, and said: "I want you to give him all the service that is possible, every attention, and I will foot the bills." On the morning when the operation was performed, in conversation with both the plaintiff and Dr. Southworth, the defendant said to the former, "I suppose you have called me in here for the purpose of having me say that I will pay for these services. Well, you boys go ahead and fix him up the best you can, and I will pay the bill." On the plaintiff telling the defendant that the operation was necessarily attended with great danger and uncertainty, he replied, "Go ahead and do the best you can for him." Another witness testified that the defendant said to the plaintiff to do the best he could for the man, and he (the defendant) would pay the bill. Not only did this testimony strongly tend to establish an original promise on the part of the defendant to pay for the services, both of the plaintiff and of Dr. Southworth, but the testimony of the defendant himself was corroborative of this view. His testimony was that, on Dr. Southworth requesting him to "stand for the expense," he said, "Yes, I will stand for the bill if you will allow me to select the man to operate," to which Dr. Southworth replied, "Well, I have selected a man and Henry wants me." "I know he does," said the defendant, "he prefers to have you, but I will not pay the bills on your account." To this Dr. Southworth answered, "I have secured Dr. Thomas; he is a good man," to which the defendant replied, "Go ahead, if he wants you; go ahead." This evidence might very properly be construed as a waiver of the defendant's wish to name the operator as a condition of paying the bill. Conceding that, even if the defendant had not promised to pay the bill, the plaintiff and Dr. Southworth might nevertheless have rendered the service, it was sufficiently clear, the court thinks, that before the performance of the operation the defendant made an original promise to pay the expense, and that the plaintiff and Dr. Southworth relied on such promise.

Society Proceedings

COMING MEETINGS

Am. Assn. for Study and Prevention of Inf. Mortality, Phila., Nov. 10-12.
Hawaiian Medical Society, Honolulu, Nov. 6-8.
Southern Medical Association, Dallas, Tex., Nov. 8-11.

INDIANA STATE MEDICAL ASSOCIATION

Annual Meeting, held in Indianapolis, September 22-24, 1915

(*Concluded from page 1397*)

The Function of the Tonsil

DR. MARCUS RAVDIN, Evansville: The function of the tonsil is still a mooted question. Some authors believe that it secretes an antitoxin and furnishes moisture for deglutition. The last statement I believe is partly true, for I have seen several patients who complained of dry throats for months after their enormously hypertrophied tonsils had been removed. The close relationship that often exists between acute articular rheumatism and acute tonsillitis has been observed for many years. At times the joint and throat symptoms are simultaneous in their onset. Endocarditis and pericarditis not infrequently follow even very mild attacks of acute tonsillitis. Chorea may be present, with or without cardiac or arthritic symptoms. Acute, subacute or chronic parenchymatous nephritis are beginning to be looked on as possible sequelae of tonsillar infections. The relation of the tonsil to cervical adenitis seems to be well established clinically. Its relation to pulmonary tuberculosis has been noted by a sufficient number of careful observers. The tonsil bears some relationship to hyperthyroidism. I have heard of two cases of acute appendicitis which followed closely streptococcic tonsillitis. Is the voice sometimes injured by the operation, as the public seems to believe? Specialists who have had a considerable experience with professional singers guardedly admit that for a short time after the operation there is an alteration in the voice, followed in a few months by marked improvement, so much so that higher and more melodious tones were attained than before the operation, and they advise that singers should be cautioned to abstain from singing for a while, or to sing only in low registers. If alteration of the voice is permanently noted, it is due to injury of the pillars and adhesions, which hinder the mobility of the throat musculature.

DISCUSSION

DR. WILLIAM S. TOMLIN, Indianapolis: I have had some experience in operating on tuberculous patients. In these cases the tuberculous process had seemed to be in the lung, the patients having previously had a slight temperature elevation and complained of being below par. In half a dozen of these cases I have removed the tonsils with most gratifying results. There has been improvement in general health, and the patients were able to leave the sanatorium. I have also had some experience in goiter cases, which in two was very satisfactory; but in two other cases, tonsillectomy did not seem to have any effect on the goiter.

DR. C. NORMAN HOWARD, Warsaw: With regard to removing the tonsils in singers, I have come to the conclusion that it is not the removal of the tonsils but the damage to the pillars that makes the trouble. In every case in which we remove the tonsils, it should be done only because we know definitely that in that particular instance the patient will be better with them out.

DR. F. V. OVERMAN, Indianapolis: A man who treats most of the famous singers in the East insists that after a voice is placed while the singer has his tonsils, their removal invariably changes the timbre of the voice.

DR. GEORGE W. SPOHN, Elkhart: In hyperthyroidism, the literature tells us that patients grow worse on removal of the tonsils. According to some, there is a certain relationship between the ovaries in woman and the tonsils. Whether or not this is true, I do not know; but men working along the line of internal excretions say that it is. I cannot imagine that I would remove the tonsils to cure hyperthyroidism.

DR. L. C. CLINE, Indianapolis: I see an evidence of the profession coming around to a sane position on the question of tonsils and adenoids. They have run riot, until the public has been educated to the point where people come to a specialist and demand that their tonsils be removed, even without an examination. There are tonsils which do not need to be removed. Large, hypertrophied tonsils which are an obstruction ought to be removed, and also some of the tonsils which probably produce quinsy. The point I want to make especially is that there is a lot of this work of removal of tonsils being done which is absolutely wrong and unnecessary. We must examine our tonsil patients and treat them as we do patients with other conditions.

DR. LAFAYETTE PAGE, Indianapolis: I have had some very successful results with tonsillectomies in singers, some asserting that their voices were improved by the operation. Others have said that there is difficulty in getting the tones for a certain length of time, but after a year or two I have not seen a single case in which the quality of the voice has not been restored.

DR. A. E. BULSON, Fort Wayne: The sooner we arrive at the conclusion that every case is a law unto itself, the better it will be for us. Not only must the tonsil be studied in every case, but also the patient as a whole. We have all had patients with repeated attacks of rheumatism who report themselves as improved or well following the removal of the tonsils, and some of them did not look very much infected either. On the other hand, we have had patients with rheumatism who did not recover following tonsillectomy, because the infection was elsewhere in the body.

DR. C. J. ADAMS, Kokomo: Loeb asserts that there is no direct connection between the tonsillar glands and the apices of the lung.

DR. MARCUS RAVDIN, Evansville: In operation on singers, Hudson Makuen favors tonsillectomy within the capsule. Leaving the capsule separates the pillars. It is the fossa tonsillaris, and not the tonsil, that affects the voice. The lymph supply of the tonsil is of great importance—greater than the blood supply. If we demonstrate that the tonsil has no direct connection with the cervical glands and other lymphatics, then the whole theory of the tonsil as an atrium of infection is wrong, and we are slaughtering tonsils for nothing. The latest German literature demonstrates the connection of the tonsils with the deep cervical glands, and again the deep cervical glands communicate with the lymphatic branches of the bronchial glands, forming a direct lymphatic connection with the apices of the lung.

Chronic Suppurative Mastoiditis, Accompanied by Intracranial Pressure: Case Report

DR. EDWIN J. LENT, South Bend: Man, aged 57, with negative family history, at age of 17 was struck on the head with a baseball bat, and had pneumonia at age of 22. A few years later he fell from a barn, a distance of about 25 feet, lighting on feet and buttocks in a sand pile. Sharp hemorrhage from right ear and nose occurred. He has had a foul-smelling discharge from right ear since childhood, without history of exanthems preceding. No treatment followed except an occasional washing. He has had a great deal of headache for the past ten years, especially during last two years, the pain being located chiefly in the vertex and radiating toward the frontal region. Examination disclosed external canal full of foul-smelling pus, eardrum practically destroyed and middle ear full of granulation tissue and polypi. Hearing reduced to watch contact. No tenderness over mastoid. Transillumination of mastoid cells showed bone to be eburnated. Caloric and rotary tests negative. Pulse 72, temperature 98.6. Vision 6/7 in both eyes. No evidence of choked disk. Tentative diagnosis of chronic mastoiditis with either extradural or intradural abscess complicating, was made. Operation advised, but refused. Patient continued to work.

Eight days after examination he fell on the street twice on his way to work. The next day he developed a paralysis in left arm and leg, and was taken to hospital. At this time cerebration was slow; urine and feces involuntary; severe pain in left temporal region and vertex; paralysis of left arm and leg; reflexes lost in left foot, normal in right; pupils equal in size; ocular movements slow. Temperature 98.6, pulse 70, full and firm. Drowsy most of the time. No neck rigidity. Operation on following day. Whole middle ear thrown into one large cavity, thoroughly curetted and dried. Eustachian tube burred out. Close inspection did not disclose any opening in floor of skull, except a small one which was made during excavation into antrum. This was enlarged, cavity flushed out with normal salt solution, and dura carefully inspected. It was not bulging. Incision then continued from upper angle to vertex; skull bared and a second button removed. In upper half of opening the dura was clearly bulging and looked pathologic. Drainage tube was inserted after dura was incised, and about 6 ounces of straw-colored fluid mixed with chocolate-colored débris evacuated. The day following operation the patient had fairly good use of left arm and leg; had some pain in the head. Continued in this condition for five days, when he became somewhat restless and noisy. Five days after operation complete paralysis of left arm and leg again ensued. Two days later he developed convulsive seizures, about fifteen minutes apart. March 15, five weeks following operation, drainage from the brain cyst was still continuing in large quantities. Much care had been exercised to keep the wound from becoming infected. At this time the nurse was directed to use no more caution, and the wound was deliberately allowed to become infected, as it was believed that by this time the brain tissue was well walled off. A smear was made from the pus, and an autogenous vaccine prepared, and given. The discharge began to lessen materially, and in twenty days had entirely ceased. The patient is now in good health.

DISCUSSION

DR. JOHN F. BARNHILL, Indianapolis: I doubt very much that the ear had any relationship whatever to the brain cyst. It seems to me that the diagnosis in this case was made on too few symptoms, although the subsequent events proved that it was correct. As to the infection of the cyst, I do not know any precedent for it. It was very extraordinary, but the patient is well, and we never can speak against that sort of thing effectively. But I believe that if Dr. Lent were treating another similar case, he would be just as careful not to infect as he was in this case, although the infection possibly caused the closure of the cyst, just as a curettement might have done. But the dissection of the cyst, freeing it entirely from the brain cavity, would probably have done it at an earlier date than by the infection of the cyst wall.

DR. GEORGE F. KEIPER, Lafayette: This case brings up the question, How many brain cysts are due to trouble within the middle ear?

DR. EDWIN J. LENT, South Bend: This patient apparently had a general cerebral involvement. Whether or not there was meningeal irritation I do not know. The temperature never went above 99; pulse was from 70 to 80. The man was apparently normal, with this meningeal irritation and the focal symptoms going on. This case teaches that we should look for these symptoms and cysts once in a while. As Dr. Barnhill said, if I had another case of this kind to deal with, a smaller cyst, I would attempt to dissect it out.

The Defenses of the Upper Respiratory Tract and Their Preservation

DR. WALTER N. CULMER, Bloomington: The natural defenses of the body are essential and inherent elements of each involuntary act. The respiratory function of the nose is controlled by defensive means that involuntarily serve to maintain the proper amount, quality and physical conditions of the air entering the breathway. Adequate ventilation of the nasal chambers, sinuses and postnasal space serve to maintain, on the one hand, the useful purpose for which the defenses operate, and, on the other hand, to sustain the integrity of the mucous membrane in the remote parts of the nasal cavities. Further down in the upper respiratory tract is a collection of lymphoid tissue whose relationship to the surrounding parts and to the economy in general has not been accurately determined. In order to preserve these natural defenses it is necessary to know the conditions that prevent their successful operation. A knowledge of the physiologic defenses reveals the fact that the relation of the upper respiratory tract to the development and growth of the body is so intimate that a study of the local changes, without noting at the same time the constitutional requirements of the individual, will often accomplish very little. One of the most forward steps in the direction of the preservation of these defenses is the medical inspection of schoolchildren.

DISCUSSION

DR. PAUL B. COBLE, Indianapolis: It is essential to good health and the general well-being of the individual that the upper respiratory tract be kept in the best possible condition. Much good can be accomplished by the medical inspection of schoolchildren in many instances.

DR. W. S. TOMLIN, Indianapolis: This paper deals with the basic principles of our work. Take, for instance, children with defective tonsils, which are interfering with the child, and in which we are sometimes asked how early they should be removed. My impression is that they should be removed as early as they give trouble. Regarding operative work in the nose, my position is a little different from that of most operators. I make submucous resections as early as 8 years of age, and would feel inclined to make them even earlier if the condition were sufficiently pathologic to demand more nasal space.

DR. WALTER N. CULMER, Bloomington: My object was to bring out a little more clearly the importance of the interrelationship of disturbances in the nose and throat with those in other parts of the body. I do not care to do septal and middle turbinal operations until after puberty, or until puberty, at least.

Chronic Suppurative Ethmoiditis

DR. WILLIAM S. TOMLIN, Indianapolis: The diagnosis of chronic suppurative ethmoiditis to be effective must develop as far as possible the causative factors, nature and extent of the pathologic condition and its bacteriology. Displaced and supernumerary cells, abnormal or unusual relationships of the cells to each other and to surrounding structures, and dehiscences in so far as possible, all depending largely on the roentgenogram, are integral parts of a working diagnosis. Extension of ethmoid cells beyond the capsule in the frontal, orbital, maxillary, sphenoid and middle turbinate structures are not uncommon in suppurative cases, and not only serve to continue the processes before operation, but also may be the most important factors in determining the whole course of the case. Transillumination gives some information, especially of the maxillary and to a lesser extent the frontal sinuses, but is not so dependable as well-interpreted roentgenograms, which perhaps should not be omitted in any case. Stereoscopic plates have served to improve the interpretations, and are of the most signal advantage in cases with circumscribed involvement. The treatment of chronic suppurative ethmoiditis is essentially surgical. Vaccines have not given the satisfaction expected of them. Without operation no benefit whatever has been observed by me.

DISCUSSION

DR. JOSEPH D. HEITGER, Bedford: Rest of the diseased part, ventilation and drainage constitute three great principles of surgery, and in the nose we obtain the first by the application of the latter two. One should examine the visual field in all accessory sinus diseases, as there is often associated an enlargement of the blind spot, ring and central scotomas.

DR. JOHN F. BARNHILL, Indianapolis: I look on the ethmoid as one of the most complicated pieces of anatomy in the

human system. The brain is close above, the eye externally and the nose internally, with all its suppurating cavity emptying near by. The interior of this capsule is filled with two sets of large vessels, and the cells often extend abnormally up into the frontal sinus, extending posteriorly and overhanging frequently the sphenoidal sinus, and enveloping the optic nerve. It is our duty to know as much about the anatomy of the ethmoid cells as it is possible to know before we attempt this kind of surgery. I look on it as the most difficult of all surgery. As surgeons, we work too often under cover about the larynx, the ear and the sinuses. We ought to take the cue from the general surgeon and work in the open.

The Blood-Clot Dressing in Closing the Wound in Operations for Simple Mastoid Abscess

Dr. K. K. Wheelock, Fort Wayne: In thirteen consecutive operations for simple acute mastoid abscess I have closed the wound primarily, employing the coagulated blood as a dressing for the dead spaces in the exenterated mastoid. These thirteen patients had a necessary detention in the hospital of ninety days. This would show an average of six and one-third days for each case; all left the hospital at the end of seven days except one, and she left on the sixth day. This patient developed a mild attack of erysipelas on the fourth day, but the mastoid wound was not invaded. In another case, a young woman with a nursing baby developed a double mastoid abscess with suppuration from both ears. Her mastoids were exenterated and closed with catgut sutures over a blood-clot dressing. She left the hospital on the seventh day.

DISCUSSION

Dr. J. O. Stillson, Indianapolis: The same rule holds good with regard to this question of blood-clot dressing as holds good in surgery anywhere—each case is a law unto itself, and must be considered in that light. In acute cases, in which it is desirable to shorten the treatment, when there is no necrosis of bone, we all like to get healing by first intention, and I think that this method would probably be of value. But in cases of long sickness due to bacterial invasion, I do not think the process of treatment would be entirely satisfactory.

Dr. W. A. Hollis, Hartford City: I have used this blood-clot dressing in one case, with such satisfactory result that I am persuaded to use it again. It seems to me that if infection should occur, it would be a simple procedure to clean the cavity out and pack it in the usual way.

Dr. A. E. Bulson, Fort Wayne: The strange thing to me is that after having been introduced and carried on by some prominent operators for nearly fifteen years, this method is not more popular. The first case in which I used the blood-clot dressing was so successful that I thought it was ideal. In the second case in which I used it, the patient nearly died with infection. My third patient also had infection, and so I consulted some of my confrères with regard to their experiences. I found that their experiences had been very similar to mine—that some of the cases were very satisfactory, and when satisfactory it was ideal, but that occasionally they had infections, and that, in their judgment, it was a rather dangerous procedure.

Dr. John F. Barnhill, Indianapolis: My experience with this method has been similar to Dr. Bulson's; the failures were abominable, and the successes were brilliant. In the streptococcic infections and cases in which the wound must necessarily be very large, because the cells are extensive, it is hazardous to use this method in a certain percentage of cases, and we cannot tell beforehand. I use the modified blood-clot dressing in nearly all of my acute cases. It shortens the process of healing several weeks, as a rule, the average in my last hundred cases being something between two and three weeks. By the modified blood-clot dressing I mean putting in a small cigaret drain to carry away any infection that may be in the center of the clot.

MEDICAL SOCIETY OF THE STATE OF PENNSYLVANIA

Sixty-Fifth Annual Meeting, held in Philadelphia, Sept. 20-23, 1915

(*Concluded from page 1484*)

Pyelitis in Infancy and Childhood

Dr. Fred E. Ross, Erie: This condition is an acute infection of the urinary tract which may become chronic, and is almost always protracted in its course. It would seem that its supposed infrequency is due to its nonrecognition, as many cases hitherto differently diagnosed have been shown to be pyelitis. The infecting organism is most often the colon bacillus. While the route of infection is not known in all cases, a direct route from the ascending colon to the right kidney by way of a chain of lymphatics is suggested in many instances. Diagnosis rests on microscopic examination of the centrifugalized sediment of a sample of urine or on a series of such examinations. While most cases run their course uninfluenced by treatment, I use either alkaline diuretics to render the urine alkaline, or rather large doses of hexamethylenamin.

Albumin was found in the urine in 50 per cent. of my twelve cases.

DISCUSSION

Dr. George E. Holtzapple, York: This condition should be borne in mind as the possible cause of irregular, obscure fever, general debility attended by pallor, loss of appetite and gastro-intestinal disturbances in children. It may or may not be associated with cystitis, and a differential diagnosis is not always easy. Pain in pyelitis may simulate appendicitis, and I have seen a case of this kind brought to the hospital for operation. It is of paramount importance to discover the pyuria and determine the nature of the infection. The pediatrist should be alert lest a possible case of the condition be overlooked.

Dr. J. P. Crozer Griffith, Philadelphia: In every case of an infant with irregular temperature in which the cause is not absolutely clear the urine should be examined. The diagnosis is then readily made. I have had four or five cases of this disease under my care at one time.

Medical and Surgical Treatment of Tuberculous Peritonitis

Dr. Theodore J. Eltzerich, Pittsburgh: Since Koenig in 1884 proposed laparotomy as a cure for tuberculous peritonitis, surgery seems to have taken the place of medicine and claims an almost exclusive right for its intervention. It has never been shown, however, that laparotomy has had a specific influence in increasing the resistance to the tubercle bacillus. The most prominent symptom of the disease is ascites. While the pleural cavity may be tapped without danger, the needle in abdominal puncture for the relief of ascites may penetrate adherent intestinal walls. The medical treatment consists in hygienic, dietetic, local and internal therapeutic measures. Heliotherapy is warmly advocated in all forms of tuberculosis by Dr. Rollier of Switzerland. In visceral tuberculosis the results are said to be excellent. My own experience with the medical treatment, although limited, is gratifying.

Morbidity and Mortality From Certain Communicable Diseases of Childhood as Influenced by Public Health Control

Dr. B. Franklin Royer, Harrisburg: The total morbidity of any communicable disease is always greater than the reported figures, because of influences beyond public health control. The only true index of the communicable diseases of childhood is the death rate, because certificates of death must be issued. The morbidity of typhoid fever is well tabulated. From a total of 24,471 cases in 1906 the number of typhoid cases declined to 7,547 in 1914. Measures influencing the incidence of typhoid fever have an even greater effect on the mortality of diarrhea and enteritis. Deaths from measles have shown a general tendency to decline under the measures imposed by the public health authorities. This is also true of deaths from diphtheria. The number of deaths

from whooping cough is cut in half. Scarlet fever has not shown the same tendency to decline. Until more is known of etiology and of the communicability of the disease, we may not hope for the best results. Educational work perhaps counts more, except sanatorium care, than any other line of public health work in the reduction of tuberculosis.

Significance of Cardiac Pain

DR. DAVID RIESMAN, Philadelphia: Causes of pain in the region of the heart may be classified as cardiac and extracardiac. Among the latter, dyspepsia, herpes zoster, pleurisy and pleurodynia are most common. Of the cardiac causes, myocardial weakness is of great practical importance, as it may be overlooked because murmurs are often absent. In addition to aneurysm and pericarditis as causes of cardiac pain may be mentioned angina pectoris and aortitis.

DISCUSSION

DR. LAWRENCE LITCHFIELD, Pittsburgh: Of two cases of which I have knowledge, one patient had been attended by the best men in the country and finally died from an anginoid attack without any one ever having told her that the cardiac pain was grave. The other case was of the type presenting pain in both arms. The cardiac disease was not regarded as serious, but the man died within a month in an anginoid attack.

DR. JAMES E. TALLEY, Philadelphia: In cases in which you suspect angina pectoris, the less you find wrong with the heart on examination, the surer you may be of your diagnosis. In a large series of cardiovascular and cardiorenal cases, about 500 in all, there were thirty-five of genuine angina pectoris; one third succumbed to an acute anginal attack and two thirds to gradual cardiac death.

DR. S. SOLIS COHEN, Philadelphia: Two very important points in this discussion are syphilitic aortitis, and so-called pseudo-angina. Syphilitic aortitis is often mistaken for angina, the syphilitic nature is therefore overlooked, and the patient is allowed to get into a much worse condition than need be. I have observed many cases of so-called pseudo-angina in which the pain occurs without structural lesions in the myocardium, coronary arteries or the aorta, in which on proper recognition and treatment the pain may disappear and the patient live, as in one case under my observation, for more than twenty-five years.

DR. ROBERT N. WILLSON, Philadelphia: There are two distinct types of true cardiac pain, the dull heavy pain of distention and dilatation, and the sharp cutting pain of aortic valve and aortic disease. It is questionable whether angina may properly be included under cardiac pain. I believe there is no such entity as pseudo-angina pectoris. The cardiac nervous mechanism, including the ganglions of the auricles and of the coronary sinus under the influence of nicotin, show definite signs of disease, and I believe that here eventually will be found the real seat of angina. If so, it will again become permissible to speak of angina as cardiac pain.

Treatment of Myocarditis

DR. JAMES M. ANDERS, Philadelphia: Treatment must be varied in accordance with the lesions and the dominating cause when ascertainable. When this cause is rheumatism, antirheumatic measures must be persevered with and the heart carefully guarded by stimulants. Modification of the antirheumatic treatment may be indicated by cardiac weakness. Digitalis is harmful when the myocardium is the seat of an acute inflammatory degeneration. In all forms of severe acute myocarditis prolonged, absolute rest is enjoined. When syphilis is the causal factor, intensive antisyphilitic treatment may be curative. In chronic myocarditis, the exclusion of chronic valvulitis is exceedingly difficult and often impossible after murmurs have appeared in chronic myocarditis. It is obvious that everything tending to throw strain on the myocardium must be avoided. In the treatment of the stage of compensation, gentle exercise that will not tax the physiologic reserve force of the already weakened myocardium should be encouraged, but fatigue is to be avoided. While there is no sovereign remedy for chronic myocarditis, in cases dependent on syphilis, mercury and salvarsan in alternation may be beneficial. The intravenous administration of the salvarsan, however, should not be employed. In diet, a low protein content, from 60 to 70 gm. daily, especially if nephritis be associated, is indicated instead of the average of 120 gm. The intake of flesh foods, strong stock soups and legumes should be minimized, and all articles causing intestinal fermentation in the individual case must be eliminated. My practice is to formulate a diet on these suggestions, adding about 60 gm. of fat, and modifying the dietary as indicated in individual cases. A suitable change of air may be beneficial in selected cases. Mineral springs may be useful, but these waters must be used cautiously. Carbonated baths are beneficial in appropriate cases. Symptomatic indications in this stage must be met in accordance with therapeutic principles. In the management of the stage of insufficiency, physical and mental rest are imperative and will in some cases overcome the dilatation; in others rest must be supplemented by the use of a cardiac stimulant to overcome passive visceral congestions and restore the compensatory mechanism of the heart. The untoward effect of prolonged rest may likewise be minimized by resistance exercises carefully conducted by a skilled operator. Digitalis if administered should be given cautiously in small doses combined with an arterial relaxant. In decided failure of compensation I have found most useful a combination of strychnin, 1/60 grain; caffein citrate, 1 grain, and spartein sulphate, 1/4 grain. Venesection may be useful in excessive hypertension in threatened apoplexy. Saline purgatives are beneficial. Diet here is of much importance. The digestible proteins may be freely allowed, with the exception of those rich in purin bases. The fluid intake should be lessened, especially when edema is present.

DISCUSSION

DR. DAVID RIESMAN, Philadelphia: The term "myocarditis" is rather loosely used when applied to acute diseases. Chronic myocarditis is never a single process. The functional and structural changes in the vessels, lymphatics, arterioles and viscera should be studied from the functional and anatomic standpoints. In the treatment of acute myocardial degeneration, the essential point is food. When milk is given as the sole diet, lactose should be added. We must adapt the patient's life and activities to the capacity of the heart as nearly as we can determine that capacity. Unfortunately, we have no definite test for the functional capacity of the heart. When compensation is once lost, rest and digitalis are the main remedies.

Inadequacy of Ordinary Methods of Disinfecting Typhoid Stools

DR. EDGAR M. GREEN, Easton: Reports received from about thirty hospitals throughout the state show that most of the institutions are disinfecting stools with chlorinated lime or phenol (carbolic acid) or some of the composite commercial disinfectants, while the period of time allowed for disinfection varied from a few moments to an indefinite period. Pathologic experiments show that such disinfection is useless. Steam sterilization can be made complete in a typhoid stool in from twenty to thirty minutes. The method is both thorough and economical, and should be insisted on in all hospitals. At present not more than 16 per cent. of our hospitals are using this method. In private practice where steam is not available, the well broken up stool should be exposed to a 6 per cent. solution of commercial formaldehyd for at least two hours, or else the stool should be treated with a cupful of commercial unslaked lime and hot water. This will generate enough heat to kill the pathogenic organism.

Hemoptysis in Pulmonary Tuberculosis and Its Treatment

DR. ELMER H. FUNK, Philadelphia: Among 373 patients with advanced pulmonary tuberculosis in the department for diseases of the chest of the Jefferson Hospital, hemop-

tysis was present in 164, or 44 per cent. Among 167 patients traced to the end, hemoptysis was noted in ninety instances, 54 per cent. The extent of the lesion does not bear a direct relation to the occurrence of hemorrhage; it may be the first or last symptom of the disease. The frank hemorrhages early in the disease probably result from the rapidity with which the tuberculous lesion erodes the vessels before they become thrombosed and occluded, as ordinarily they do in advance of the lesion. Rupture of aneurysmal dilatation of vessels within the cavity or embedded in its wall is probably the important factor in the profuse hemorrhage late in the disease. We have grouped pulmonary hemorrhage under: (1) frank profuse hemorrhage; (2) small and mild hemorrhages; (3) persisting hemorrhages, and (4) blood-streaked sputum. The expectoration of blood-streaked sputum ought to be given as careful thought as the profuse frank hemorrhage. There is noted at times what might be called an epidemic of blood spitting in a group of consumptives, and we are at present conducting a series of observations in this connection. In the treatment of hemoptysis in pulmonary tuberculosis, individualization is the keynote of success. Rest is by far the most important therapeutic procedure. Diet depends largely on the severity of the hemoptytic attack. Drugs play a minor, though if judiciously used, an important part in the therapy of hemoptysis. We are inclined to the belief that emetin is of distinct value in hemoptysis in which there is a tendency to repeated small hemorrhages or in cases suggesting capillary bleeding. The use of drugs to lower general blood pressure and for their action on the pulmonary circulation has not availed us much. We have discarded the time-honored ice bag on the chest. In cases in which blood gushes from the mouth, ligatures should be placed around the extremities, exerting just sufficient pressure, however, to retard the venous return and not to obstruct the arterial inflow. When the bandage is removed it should be done gradually. Persistent bleeding which fails to respond to the usual methods calls for a consideration of the therapeutic use of artificial pneumothorax. It is of vital importance, particularly in protracted cases, to secure free movements of the bowel daily, provided positive contraindications are absent. Evacuation is best accomplished by the salines, and of these preferably by magnesium sulphate.

DISCUSSION

Dr. C. R. Phillips, Harrisburg: From our observations at State Tuberculosis Dispensary 13 from March 1, 1908, to March 1, 1915, in a series of 5,700 cases diagnosed as tuberculosis pulmonalis, we concluded that about as many persons die from tuberculosis without having had hemorrhages as those who have; that hemorrhages are as likely to occur early in the disease as late; and that dispensaries and sanatoriums reduce the frequency of hemorrhage. In only 21 per cent. of the cases did hemorrhage occur after coming under our care. Hemorrhage per se cannot be considered; it is only a part of a vast clinical and pathologic picture, the significance of which depends on the accompanying conditions.

AMERICAN ROENTGEN RAY SOCIETY

Sixteenth Annual Meeting, held in Atlantic City, N. J., Sept. 22-25, 1915

The President, Dr. Alfred L. Gray, Richmond, Va., in the Chair

Roentgenographic Diagnosis of Metastatic Malignancy in the Lung

Drs. A. B. Moore and R. D. Carman, Rochester, Minn.: We examined 71 positive cases; average age of patients, 45½ years; average time since primary growth was noticed, three years and three months. The distribution of the primary focus was: breast, 20 cases; thyroid, 8 cases; soft tissues of forearm, 11 cases; kidney, 5 cases; soft tissues of neck and face, 5 cases; uterus, esophagus, prostate and testicles, 2 cases each, and 1 case each in the hard palate, larynx, suprarenal and sigmoid. In 59 cases the pathologic report was: carcinoma, 40, and sarcoma, 16; hypernephroma, 3 cases. Fourteen patients showed metastases in other organs besides the lungs, the most frequent being the liver, bones and brain. In 42 cases the primary growth was removed, with 19 local recurrences. Cough was the most common symptom, being present in 32 of the 71 cases. Dyspnea was present in 30 cases; pain in 14 cases, and pleural effusion, 12 cases, the fluid being bloody in 10. Only 16 patients gave evidence of pulmonary trouble. Loss of weight was not a marked clinical feature, being very indefinite in most cases. The roentgenographic findings were very positive, the manifestations appearing as clear-cut circumscribed areas of increased density.

Pulmonary Tuberculosis

Dr. Kennon Dunham, Cincinnati: The abnormal densities in the linear markings found in tuberculosis of the lung are due to tubercles situated along the bronchial tree. These tubercles when quite small break into the bronchus, forming minute microscopic cavities, the bronchus being a natural drainage tube of these cavities. Thus the spread of tuberculosis is along the bronchial branches, and until large cavities are formed, the lesion is limited to this particular distribution by means of its natural drainage tube, and not by a fibrous wall, as has been stated. The subsequent spread of the lesion is not from one small branch to its neighbor, but it goes back and extends along another main trunk or bronchus, either an adjoining bronchus or one lower down.

Roentgen Findings in Pulmonary Tuberculosis

Dr. Frank S. Bissell, Minneapolis: The interwoven appearance of pulmonary striae, described by Dunham, is a characteristic sign of pulmonary tuberculosis. It was present in 63 consecutive cases in which a positive constitutional reaction to tuberculin was obtained. In 12 negative cases (tuberculin test) the network was absent in 10 and typical in 2. The total number of lung cases examined and not diagnosed clinically was 111. A Roentgen diagnosis of pulmonary tuberculosis was made in 64 cases, sustained by clinical diagnosis in 38, and partially sustained in 8 cases. Thirteen cases reacted to tuberculin; the diagnosis was made by animal inoculation in 1 case, and by necropsy in 2 cases; by finding the bacilli in the sputum in 5 cases; by physical signs considered positive in 17, and by physical signs considered doubtful in 8 cases. Eighteen cases were unsustained by final clinical diagnosis, with symptoms not explained by any diagnosis in 13 cases, and extensive fibrosis or evidence of an inactive process in 5 cases. The total number of cases not diagnosed as tuberculosis by the Roentgen ray was 47, one of which was later shown to be tuberculosis. In 46 cases the negative Roentgen diagnosis was sustained by the clinical diagnosis. Therefore, the Roentgen ray has given the term "early diagnosis" a new meaning.

DISCUSSION ON PAPERS OF DRS. MOORE AND CARMAN, DUNHAM AND BISSELL

Dr. W. F. Manges, Philadelphia: We should not expect to see small pulmonary lesions except with the aid of the stereoscope. Some clinicians are of the opinion that we cannot show these lesions. I think this is due to the fact that they have not seen some of this good work, because it has been shown conclusively that the Roentgen ray can detect these lesions sooner than can be done by clinical methods. Recently I saw a patient who had been advised to have an operation for gastric ulcer. I examined him roentgenographically and found his stomach normal. I made fluoroscopic plates of his chest, and found the apices of both lungs densely infiltrated with small dense spots showing everywhere, the pleura much thickened. I did not believe, however, that it was an active tuberculosis, but even at that it was worth while knowing that these lesions were there, and if I had not incidentally made the examination of the lungs a part of my examination, this evidence would have gone undetected. Dr. Moore's paper indicates the necessity for more careful routine examination in all cases. Cancer cases should be examined in this way before any operation is performed, in

order to determine whether metastases are present, not only in the lungs, but elsewhere, because if there are metastases it is useless to operate for the primary carcinoma. If there are none present, it is well to know it for the sake of record, if the patient should return later with a recurrence.

DR. GEORGE E. PFAHLER, Philadelphia: The diagnosis of pulmonary carcinoma should receive more attention. It would be well for surgeons to examine every patient before operation, especially those who show evidence of glandular involvement. Several surgeons in Philadelphia make it a rule to send these patients to me for Roentgen examination. In many cases referred to me for postoperative treatment I have found evidence of pulmonary disease. The early signs of pulmonary carcinoma are very much like those of pulmonary tuberculosis. Sarcoma is entirely different. I have seen a number of cases in which I could not make a differentiation between carcinoma and tuberculosis. In many cases of carcinoma of the lung secondary to breast cancer, the lesions are more marked on the side of the primary tumor in the breast than on the opposite side. Of course, carcinoma elsewhere in the body may cause pulmonary metastasis. We must search carefully for those areas of increased density. Some of these cases are primary in the lung.

DR. RUSSELL H. BOGGS, Pittsburgh: I have examined a few cases of pulmonary carcinoma in which the primary lesion is in the bone. I think most of these cases are of the scirrhous type of carcinoma.

DR. P. M. HICKEY, Detroit: I should like to call attention to one point in the diagnosis of carcinoma of the lung, and that is the tendency of the infiltrating lines to extend across the lower part of the right lung. That is due to the interlobar infiltration between the middle and lower lobes. The presence of these lines, when they are well defined, is suspicious of malignant disease. The first infiltration in cases secondary to carcinoma of the breast is in the pleura. At the necropsy little nodules are found in the parietal pleura, extending along in rows like drops of wax. They give very characteristic Roentgen shadows, which should be studied stereoscopically.

DR. S. B. CHILDS, Denver: The early stages of pulmonary tuberculosis can be detected on the roentgenogram. The lesion shows in the form of areas of increased density around the root of the lung. These areas are so small that they cannot be detected by clinical examination.

DR. H. W. DACHTLER, Toledo, Ohio: The Wassermann test may explain some of these cases of râles all over the lung without evidence of tuberculosis. I have found that to be true in a number of cases. I always make roentgenograms of all patients operated on for carcinoma of the breast, and have found this to be of value in checking up later, when these patients return with a recurrence. As to the direction of travel of the infection: I always thought it was out along the peribronchial gland, but I am not so certain about that now. Infection usually follows the lymph stream, and I have seen cases in the last few years in which there were definite tubercles along the axillary region, with no evidence of infection in the hilus.

DR. JAMES T. CASE, Battle Creek, Mich.: I have had a case in which the diagnosis of lung cancer was based on the presence of a single, small, rounded shadow, at the level of the nipple, the shadow resembling those pointed out by Dr. Moore. I made stereoscopic plates and they showed plainly that this was the nipple shadow. This might be a source of error. For several years I have made a stereoscopic chest examination of every patient about to be operated on for carcinoma of the chest, in order to be forewarned as to the presence of metastasis, and as a matter of record for future comparison, if a patient should return with symptoms suggesting metastatic involvement.

DR. DAVID R. BOWEN, Philadelphia: A boy was operated on for sarcoma of the forearm. A recurrence was treated with the Roentgen ray, and the boy apparently recovered, although he remained in the hospital. He was the sort of individual who never failed to complain when he did not feel well, but this time he made absolutely no complaint, in spite of the fact that when we made a Roentgen examination of his chest we found a marked metastasis in the lung.

Fluoroscopic Bronchoscopy

DR. GEORGE W. GRIER, Pittsburgh: Fluoroscopic bronchoscopy is indicated only when the foreign body is located in the bronchus or other structure which is inaccessible to the bronchoscope. In such cases the extracting forceps can be projected beyond the end of the bronchoscope, grasping the foreign body and removing it under the direction of the fluoroscopist.

Intensive Deep Roentgen Therapy

DR. GEORGE C. JOHNSON, Pittsburgh: This method is capable of producing rapid destruction of superficial malignancy without pain in from one to three sittings, even in such locations as the eyelid. Postoperative radiation should be carried out conscientiously over a wide area beyond the apparent limitations of the disease, and sufficient radiation must be employed to insure the complete sterilization of the tissues. Often the area treated is not sufficiently large, and many malignant cells lying in the tissues beyond the reach of the ray survive and the result is an early recurrence. Deep Roentgen therapy will also produce quickly and painlessly and safely an artificial menopause in various gynecologic conditions.

Roentgen Observations on the Duodenum

DR. JAMES T. CASE, Battle Creek, Mich.: I saw one case of carcinoma of the duodenum at about the papilla of Vater. In two other cases a diagnosis of pancreatic tumor was made, differentiating it from gallbladder disease. I have seen four cases of true diverticula of the duodenum occurring in the pars inferior, and three cases of dilatation of the ampulla of Vater. One case was complicated by multiple diverticula of the colon, and in two cases there were multiple diverticula of the jejunum.

Treatment of Epithelioma

DR. J. H. EDMONSON, Birmingham, Ala.: In treating cutaneous malignant disease I begin with fulguration, cauterization or coagulation. This destroys the most superficial and a great number of the deeper cells. It renders the field immediately accessible to treatment, and it closes the metastatic channels. Following this I expose the neoplasm to the unfiltered ray, thoroughly protecting the neighboring tissues. The next day I repeat the treatment, including about one-half inch of the surrounding tissues. If there is any evidence of the growth after the reaction subsides, I repeat the treatment. If not, I give a light treatment only to destroy any cells that may have escaped.

Effect of Moderate Doses of Opium Derivatives on Gastro-Intestinal Tract

DR. HENRY K. PANCOAST, Philadelphia: Observations were made on a series of eleven persons getting morphin and one heroin habitué. With one exception there was a decided lack of uniformity in the effects produced in different individuals. Small doses produced more marked effects than large doses. Females appeared to be more susceptible than males. In the stomach a rather high spasmodic hourglass contraction is observed rarely, but we have not seen it near the pylorus, as described by others. In some instances the stomach may show no appreciable change from the normal. In most cases there is more or less pyloric spasm, increased peristalsis, and a decided prolongation of the emptying time. In the small intestine, morphin causes decreased motility almost uniformly, apparently as a result of a lack of propulsion and not of spasm. When marked, it is most noticeable in the upper bowel. The effect on the large bowel is variable and probably of little consequence. Oral administration produces practically the same effect as subcutaneous injections.

(To be continued)

COLORADO STATE MEDICAL SOCIETY

Forty-Fifth Annual Meeting, held at Denver, Oct. 5-7, 1915

The President, Dr. George B. Packard, Denver, in the Chair

Five Cases of Relapsing Fever, Originating in Colorado

Dr. Charles N. Meader, Denver: We have had five patients and probably a sixth who have been ill with precisely the same train of symptoms. The outstanding features are, in brief, slight prodromal weakness and malaise; abrupt onset of fever accompanied by intense headache, chiefly occipital, with severe loin and leg ache; nausea or vomiting with constipation; marked prostration, and a high fever of 102.5 to 104.8 F. running a definite course of two or three days and ending by an abrupt crisis, the fall being accompanied by profuse sweating. There is, further, a recurrence of similar attacks to the number of three or four at rather definite intervals. Convalescence from the single attacks is rapid and is marred only by a slow return of muscular strength. The striking point on physical examination in the two cases seen during the height of the attacks has been a pulse which is weak out of all proportion to the apparent severity of the disease, due probably to a slight cardiac dilatation, with a moderately enlarged and tender liver and spleen. Of the laboratory findings, the appearance and disappearance of a considerable amount of albumin and large numbers of fine hyaline casts in the urine are strikingly rapid. The normal or diminished leukocyte count, accompanied by a fall in the proportion of polymorphonuclears and a rise in the transitionals during the attack, with a slightly increased white count, and a return to normal cell proportions in the intervals, is noteworthy. The feature of the blood examination, which is the criterion of diagnosis, is, of course, the demonstration of the spirochetes. This was accomplished in smears stained by the usual Wright stain in two cases. Spirochetes could never be found in the intervals between attacks. There seems, then, little room to doubt that these cases represent a small local outbreak of relapsing fever.

DISCUSSION

Dr. Henry Sewall, Denver: I see no reason why we should not have an endemic focus started in Colorado which would be very serious to the people whom we invite in the summer. The disease may become endemic, but by a very little precaution we can avoid that. Our health authorities should communicate with the central quarantine authorities. It is time for action.

Dr. William T. Councilman, Boston: These blood diseases can spread only through the medium of some agent which outside of the body conveys the parasites in the blood to some other person. We have a striking example of that in malaria. We must not only have the parasite which is the cause of the disease, but we must also have some other parasitic organism to convey the disease. So far, we have been very fortunate in regard to those diseases because the parasites which are within the blood have been brought to this country or from other countries where the two parasites are endemic. We have a blood parasite brought to us again and again, but so far we have been very fortunate in that the parasite which conveys the disease, either a tick or a louse or some other agent, has not, as a rule, found a suitable environment in this country. We have had striking examples of that in regard to sleeping sickness. Sleeping sickness was brought to this country by Africans, and they died in this country; but the disease was not recognized, and there was never occasion for the spread of the disease, because the fly, which was the necessary agent for the reproduction of the disease, was not brought to this country.

The Effects of High Altitudes on Cardiac Affections

Dr. A. Zederbaum, Denver: The heart is endowed with a wonderful recuperative power, and with an unexcelled faculty of adjusting itself to situations and circumstances. This adjustment is often given better facilities in high altitudes than in the lowlands. There are conditions of the heart which strongly contraindicate residence in a high altitude, but they are not many, and should be studied carefully in each individual case before a final judgment is pronounced.

DISCUSSION

Dr. G. Walter Holden, Denver: It has been my observation for the last seventeen years in Colorado that there is little or no change in the heart conditions in cases I have met in my special work with tuberculosis. The cases run practically the same course in this altitude as they do at sea level. If patients come out here early with an aortic stenosis, with pericardial or pleuritic adhesions, they are bound to have trouble. They have to be extremely quiet for a long time, and their exercise and muscular movements should be controlled. That applies to patients residing at sea level as well as to those living in Denver.

Dr. O. M. Gilbert, Boulder: Ordinarily, I say to people that about 98 per cent. of what you hear about the serious effects of high altitude on heart disease is simply imaginary, based on some preconceived notions, and the other 2 per cent. is real; but one of those realities may be a mitral stenosis.

Dr. A. S. Taussig, Denver: If a patient has a moderately good heart muscle, regardless of the character of the lesion, we are safe in saying that that patient can come to a high altitude and be benefited thereby. Physicians in the East are not able to form a proper idea of the influence of high altitude on account of two things: first, from a lack of personal experience and, second, from their own negligence in sending patients to a lower altitude after they find seriously damaged hearts. I do not believe any practitioner in the East can obtain an adequate idea of what high altitude will do in cardiac cases.

Immunity in Tuberculosis

Dr. Gerald B. Webb and Dr. G. Burton Gilbert, Colorado Springs: Experimenting for some years with minimum lethal doses of tubercle bacilli, we find that virulent cultures probably vary somewhat, but in general ten bacilli inoculated subcutaneously will produce tuberculous disease in guinea-pigs. We have not yet found any safe method of injecting a single minimum lethal dose to produce infection in guinea-pigs without producing a spreading infection in these animals. We have injected these doses with immune blood platelets, with immune lymphocytes and with immune serum, yet infection has resulted in many cases. We have excised the local lesions early, and we have caused local lesions in strips of skin anchored only at one end to the guinea-pig, but too frequently we have found disease has spread beyond to neighboring lymph nodes. We have succeeded in producing safely some immunity to tuberculosis when we have inoculated very small numbers of tubercle bacilli of moderate virulence, gradually increasing these numbers. With the most virulent cultures, however, even this cannot be achieved, as infection will take place. We are at present attempting to isolate a culture of tubercle bacilli which will be virulent enough in these small progressive numbers to produce immunity in guinea-pigs without producing infection.

Tuberculosis of the Kidney

Dr. Oliver Lyons, Denver: Evidence obtained by palpation should be accepted with caution. For example, a diminution in the size of the kidney, due to cicatricial contraction subsequent to caseation, may lead the physician into error, particularly if the healthy kidney has undergone compensatory hypertrophy. The patient may or may not present the general character of tuberculosis elsewhere in the body. In the average case anemia, wasting and cachexia are not observed for many months or even years. Sweating, chills and fever are signs of secondary infection, and are due to the absorption of toxins after suppurative processes have begun. In this case the loss of weight, appetite and strength may be very marked. The main reason for the failure of early recognition of renal tuberculosis lies in the fact that we are not on the outlook for it.

(To be continued)

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

Albany (N. Y.) Medical Annals

October, XXXVI, No. 10, pp. 467-516

1 Problems of Public Health Education. C. E. A. Winslow, New York.
2 Public Health Nursing as Community Service. K. B. Whitmore, Albany.
3 Id. E. P. Crandall.
4 *Form of Reflexes in Chorea; Technic of Elicitation; Studies in Neurologic Technic No. 4. W. B. Swift, Boston.

4. Form Reflexes in Chorea.—Swift urges that the form of the reflex in chorea calls for four precautions in elicitation. *A.* The relation of the reflex to the choreic contraction demands a number of trials. *B.* The less frequency found in the milder forms demands that in mild cases more trials are necessary, and in severe cases less trials, usually ten trials, rarely twenty-five or fifty. *C.* As a choreic contraction has more time to occur in a reflex describing a large arc, choose reflexes with long pendulums, as the knee-jerk and triceps. *D.* As choreic contractions increase their frequency with efforts to control them, precede each test with the instruction to "hold still." In a word, Swift would make numerous trials, the more the milder the case, on reflexes with long swings, knee-jerk and triceps and precede each test with the order to "hold still." Then watch for the form of the reflex response, which a choreic contraction may turn into a jerk, a flop, or a wabble.

Archives of Pediatrics, New York

September, XXXII, No. 9, pp. 641-720

5 *Cubic Air Space for Institutional Bottle-Fed Infants. T. S. Southworth, New York.
6 *Prophylactic Vaccination for Varicella. S. Rabinoff, New York.
7 Physical Examination of Heart in Children. J. E. Talley, Philadelphia.
8 *Birth Fractures of Humerus from Wards of New York Lying-In Hospital. E. D. Truesdell, New York.
9 Modern Children's Pavilion (Abraham Jacobi Division for Children of German Hospital, New York). A. L. Goodman, New York.

5. Cubic Air Space for Institutional Infants.—In the hope of securing some definite data of value and authority on this subject Southworth sent a questionnaire to each member of the American Pediatric Society. Thirty-three answers containing sufficient data to incorporate were received from pediatricians who reported on forty-nine hospitals and institutions containing infants. The majority (twenty-one in number) of the hospitals and institutional wards for infants from which reports of cubic air space were received provide 1,000 cubic feet and upward of air space for each inmate, and only five reported 600 cubic feet or less. Even with 1,000 or more cubic feet of air space, free ventilation is deemed highly important, and as the space decreases such free ventilation becomes more and more imperative. No allowance of cubic air space is at present made for the necessary attendants in wards. Reduced cubic air space means less square feet of floor space and less separation between cribs, with proportionately increased opportunity for the spread of cross infections. There is a growing belief that even with free ventilation separation of the beds plays as important a rôle as cubic space. Such adequate separation, however, is only attainable with large cubic air space. The majority of pediatric physicians believe that infants should have as much cubic air space as adults, if not more, and this is especially true of bottle-fed infants, because they are more susceptible to infection, suffer in their nutrition in confinement, and notoriously do badly in all except the best equipped institutions. Even with a liberal allowance of cubic air space free and abundant ventilation is of equal importance. In addition, provision for roof-gardens, porches and sun parlors is advisable, if not imperative. The mere presence of windows does not of itself constitute ventilation but their proper use must be provided for. A low minimum of cubic space established by law, without definition of what constitutes efficient ventilation, and without enforcement, Southworth believes may be more harmful than beneficial, and constitute a virtual license to overcrowd in ill-ventilated wards.

6. Prophylactic Vaccination for Varicella.—During an epidemic of varicella in the wards of the Hebrew Infant Asylum during the winter just passed, Rabinoff tried out prophylactic vaccination. In the majority of instances it was necessary to use material directly and immediately from either the vesicles or the pustules. The method used was similar to that of Kling, except that instead of multiple punctures small scarifications were made on the arm to be vaccinated. In none of the vaccinated cases was there any evidences of systemic disturbance. Among 142 susceptible children, 114, or about 75 per cent., developed varicella. In the group of seventy-six vaccinated children there were only six cases, or about 8 per cent. of the total number. Of these six cases, two developed on the day following vaccination, two seven days later, one nine days and the last ten days later. In other words, all the cases among the vaccinated children developed within the incubation period of the disease, which is about sixteen days. Rabinoff is convinced that in this epidemic the vaccinations undoubtedly limited the spread of the disease.

8. Birth Fractures of Humerus.—Twenty-four fractures in twenty-one infants were collected by Truesdell. All have been followed to their final outcome, roentgenograms and clinical examinations having been made at intervals in each case until this had been determined. In a few cases the deformity was extreme; in every case there was some. In no case has the roentgenogram failed to show a uniformly progressive elimination of the deformity. Of the twenty-four fractures, seventeen occurred during version with breech extraction, four during simple breech extraction, and three in vertex presentations, difficulty having been experienced in extracting the anterior arm, either because of narrowing of the pelvic outlet, or of the size of the child. In three cases the fractures were double, and of the twenty-one infants, seventeen survived. In all cases but one the line of fracture was practically transverse, a typical pipestem fracture, the site of fracture being at or near the center of the shaft of the bone, just below the insertion of the deltoid muscle. In one case, a shoulder presentation, a fillet had been applied to the prolapsed arm and traction maintained on this during the version, causing some twisting or torsion of the extremity. In this one instance the line of fracture was oblique.

The prevailing deformity was an external angulation attributable directly to the action of the deltoid, and quite excessive in a few cases. A second variety of deformity was a lateral displacement, the fragments lying parallel, but more or less separated. Overriding of the fragments was not noted in any case, nor was displacement in an anteroposterior direction. Each fracture was accompanied by a well marked wrist-drop, due to some injury to the musculospiral nerve at the time of fracture, since the paralysis was immediate and so not likely due to accumulation of extravasated blood or callus inclusion. The paralysis gradually disappeared during the first three or four weeks in the majority of the cases, and in none was evidence of it observed after the end of the sixth week. In one case the fracture was complicated by an Erb's birth palsy of the same arm. The repair of the fracture was as prompt in this as in the other cases, the bone finally uniting with a moderate degree of external angulation. The treatment of these fractures varied from time to time. A V-shaped splint cut from thin wood, deeply crotched at one end to fit the axilla, and applied to the inner side of the arm and flexed forearm, was employed, with good results.

Boston Medical and Surgical Journal

October 14, CLXXIII, No. 16, pp. 565-602

10 *Analysis of Three Hundred and Eight Cases of Typhoid in Children. K. G. Percy, Boston.
11 Therapeutic Value of Occupation for Insane. E. L. Haines, Boston.
12 Teaching of Applied Therapeutics at Tufts Medical School. F. H. McCrudden, Boston.

13 Workmen's Compensation Act and Physician. H. J. Cronin, Cambridge
14 *Method of Testing Gastric Secretion by Use of Self-Closing Dredge. A. M. Burgess, Providence, R. I.
15 Sunshine; Its Neglected Analgesic-Sedative Action. J. Bryant, Boston.
16 Neuroma of Ulnar Nerve; Analysis of Case. J. B. Ayer, Boston.

10. **Typhoid in Children.**—In compiling these statistics Percy procured percentages from the total number of records which mentioned the point desired. Fever was noted in the histories in 82 per cent. Headache was a marked symptom in 57 per cent. Malaise was present in but 38 per cent. Vomiting occurred as a definite symptom in 26 per cent. Twenty-five per cent. of all patients gave a history of abdominal pain. Diarrhea is mentioned but sixty-two times, 21 per cent. Nosebleed occurred in 17 per cent. of this series, and of those, 78 per cent. within the first week of the disease. Constipation was a common symptom. Cough was noted in 8 per cent. Percy obtained a record of positive family history in sixty-six, or 23.7 per cent., while 76.6 per cent. gave no known contagion. The spleen showed enlargement to palpation on entrance in 68 per cent. of cases and was noted as enlarged to palpation in 79 per cent. of all cases some time during their stay in the hospital. Rose spots were noted ninety-four times in 280 careful records, or 33 per cent. at entrance and a total of 57 per cent. sometime during the course of the disease.

Widal's test was done on 280 patients of this series. On admission 80 per cent. were positive; 13.2 per cent. more were positive during their stay; 7.8 per cent. were negative. White blood cell count was done in 258 patients at or within three days of admission. Of these 14 per cent. were below 5,000; 57 per cent. were between 5,000 and 10,000; 29 per cent. were between 10,000 and 15,000. Fifty-one cases, or 67 per cent., either at entrance or within the first ten days gave positive diazo reactions. Blood cultures were done in seventeen cases only of this series. Twelve cases, or 70 per cent., were positive. Relapses occurred in sixty cases of 300 records in which the patients stayed in the hospital until discharged well, or in 18 per cent. of this series. Five patients had two relapses. Hemorrhages of the intestines occurred in four patients one of whom died and another of whom had as the apparent etiology a severe purpura with hematuria. There were no cases of perforation of the bowel. Complications were noted in 102 cases, or one third of this series. This series shows a mortality of 2.9 per cent. in 306 cases.

14. **Testing Gastric Secretion by Use of Self-Closing Dredge.**—Burgess' method consists of the use of a capsule, which is so constructed that it automatically closes as it leaves the stomach, and thus protects its contents from contamination.

Bulletin of Johns Hopkins Hospital, Baltimore

October, XXVI, No. 296, pp. 341-366

17 Important Contributions to Clinical Medicine During Past Thirty Years from Study of Human Blood Pressure. T. C. Janeway, Baltimore.
18 Elusive Mobility of Breast in Case of Retromammary Cyst. W. S. Halsted, Baltimore.
19 *Case of Foot-and-Mouth Disease in Man. P. W. Clough, Baltimore.
20 Method for Study of Morphology and Reproduction in Filamentous Organisms. T. R. Boggs and M. C. Pincoffs, Baltimore.
21 Study of Ferments and Antiferments of Body and Their Relation to Certain Diseases. J. W. Jobling and W. F. Petersen, Nashville, Tenn.
22 Antagonism Between Lactic-Acid and Spore-Bearing Organisms in Milk. W. S. Kiester, Baltimore.

19. **Foot-and-Mouth Disease in Man.**—The clinical picture presented by Clough's patient was that of a mild febrile infectious disease, characterized by the appearance of an erythema and a superficial vesicular eruption over the mucous membrane of the mouth and on the skin of the hands and feet; by salivation; by swelling, burning and parasthesias of the affected parts, with subsequent desquamation; and by healing of the ulcers without scar formation. The disease was present at the time in cattle in the neighborhood of Baltimore, and infection by means of milk or cream was possible, though it could not be demonstrated. Experimental proof of the nature of the disease by animal inoculation could not be obtained. Nevertheless the clinical picture was so characteristic that the diagnosis seemed reasonably certain. Treatment consisted of mouth washes of potassium chlorate and permanganate, and the application of skin lotions to relieve the itching. On the seventh day some of the exudate scraped from the vesicles in the mouth was inoculated into the mouth of a young dog after scarification of the mucous membrane. No lesion developed.

California State Journal of Medicine, San Francisco

October, XIII, No. 10, pp. 375-414

23 Nerve Injuries; Their Influence on Period of Disability. T. G. Inman, San Francisco.
24 Relation of So-Called Strained Back to Disability Following Industrial Accidents. S. Hyman, San Francisco.
25 Traumatic Neuroses in Relation to Industrial Accidents; Prognosis and Treatment. W. F. Schaller, San Francisco.
26 Some Remarks on Industrial Insurance Work. M. E. Rumwell, San Francisco.
27 Internal Medicine in Relation to Industrial Accidents. R. Bine, San Francisco.
28 Fracture Records; National Effort Toward Standardization. T. W. Huntington, San Francisco.
29 Use of Carbon Dioxid in Dermatology. E. D. Lovejoy, Los Angeles.
30 *Relation of Certain Urinary Findings to Prognosis on Pulmonary Tuberculosis. J. C. Cummings, Sacramento.
31 Infection; Its Prevention and Treatment. Results in Five Hundred Traumatic Cases. C. Dederer, Los Angeles.
32 Scope and Limitations of Psychiatric Clinic in San Francisco. E. C. Reid, San Francisco.
33 Pulsating Exophthalmos Treated by Slow Occlusion of Common Carotid Artery with Neff Clamp. S. D. Brazeau, Spokane.

30. **Relation of Urinary Findings to Pulmonary Tuberculosis.**—The pavilion for tuberculous patients at the Sacramento County Hospital has an average of from twenty to thirty inmates, nearly all of whom have advanced lesions. This group seemed to offer a good opportunity for checking up the urochromogen and diazo tests clinically and not infrequently pathologically as well. During his service Cummings examined 100 patients. In making the so-called urochromogen test the technic of Weiss was used. In 100 successive admissions of patients suffering from pulmonary tuberculosis only fourteen could be given a favorable clinical prognosis. In no case considered as "favorable" from a clinical standpoint did the so-called urochromogen reaction appear in the urine. In seven of the fourteen cases (50 per cent.) clinically considered "favorable" a positive diazo reaction was obtained. In thirty-nine of eighty-six (45 per cent.) clinically unfavorable cases the urochromogen test was positive while in fifty-three (61 per cent.) the diazo test was positive. Seventeen of 100 patients died in six months. Of these seventeen, eleven (65 per cent.) showed a positive urochromogen, and thirteen (76 per cent.) a positive diazo while ten (59 per cent.) showed both. Of seventeen patients showing a positive urochromogen test with a negative diazo (a combination considered especially ill-omened by Weiss) none has died to date. Of thirty-nine patients having a negative urochromogen and a positive diazo, five have died.

Cleveland Medical Journal

August, XIV, No. 8, pp. 533-580

34 Cases of Hemorrhagic Conditions in Infants. J. Phillips, Cleveland.
35 Treatment of Syphilis of Central Nervous System. O. P. Bigelow, Cleveland.
36 J. W. Mueller, on Transfusion — Retrospect. T. Sollmann, Cleveland.
37 Clinical Experience with Capsicum, Potassium Bitartrate and Terebene. H. F. Biggar, Cleveland.

Delaware State Medical Journal

August, VI, No. 9, pp. 1-32

38 Some Clinical Suggestions from Recent Work on Carbohydrate Metabolism. L. Hamman, Baltimore.
39 *Elementary Electrotherapeutics. M. Marshal, Jr., Milford.
40 Static Electricity. H. J. Stubbs, Wilmington.
41 Wayside Notes on Tuberculosis. A. Robin, Wilmington.
42 Dietetic and Medicinal Treatment of Eczema in Children. D. Rossman, Wilmington.
43 Iritis and Cyclitis; Report of Case of Metastatic Gonorrheal Keratoiritis. W. O. LaMotte, Wilmington.

Georgia Medical Association Journal, Augusta

October, V, No. 6, pp. 127-148

44 Gonococcemia. W. L. Champion, Atlanta.
45 *Second Infection of Syphilis; Wax in Bladder Causing Stones. T. E. Blackshear, Macon.
46 Small Fibrous Prostate. A. L. Fowler, Atlanta.
47 Improved Method of Draining Bladder after Prostatectomy. G. E. Ballenger and O. F. Elder, Atlanta.
48 Papilloma of Bladder; Report of Two Cases. M. L. Boyd, Atlanta.
49 Unique Case in Gunshot Wounds. J. G. Standifer, Blakely.

45. **Second Infection of Syphilis.**—September, 1914, Blackshear's patient consulted him for a sore on the penis. This proved to be a chancroid, which healed up promptly under local treatment. Blackshear saw him again three months later. He then presented a typical sore of ten days' duration. Period of incubation uncertain, owing to various exposures. This lesion on examination by dark field illumination, showed the presence of *Spirochaeta pallida*, and the diagnosis of syphilis was made. He had a moderate degree of inguinal adenitis. The patient stated that he had contracted syphilis three years before; had been given three intravenous injections of salvarsan. At that time he presented a typical case of syphilis, stiff joints, swollen glands, headache, throat symptoms and a beautiful eruption.

Journal of Cutaneous Diseases, New York

October, XXXIII, No. 10, pp. 667-730

50 *Pemphigoid Eruptions Following Vaccination. W. H. Mook, St. Louis.
51 Primary Syphilis of Tonsil. C. M. Smith, Boston.
52 Trichloracetic Acid and Its Uses in Dermatology. C. N. Davis, Philadelphia.
53 Tuberculosis of Tongue. W. Blancard, New York.

50. **Pemphigoid Eruptions.**—The cases in Mook's report were all primary vaccinations. The lesions showed a predilection for certain areas, localizing around the mouth, neck, extremities, and especially the joints. He states that the pemphigoid variety may appear as small vesicles, resembling chickenpox and smallpox, or as papulovesicles, and may become pustular. The bullae are usually clear and tense on normal skin, though they may be on inflamed and eczematoid areas of great variety in sizes, forms and configurations in the same individual. Hemorrhagic bullae are frequent. Circinate and concentric rings of bullae are marked features. In some cases the central bulla is hemorrhagic, with concentric, serous vesicles and bullae and not necessarily intercommunicating. Others have a tendency to the production of large, gyrate patches of peculiar inflammatory areas, resembling mostly eczematoid dermatitis. The period of incubation may vary from three to four days to four months. A majority of the cases vary from three to five weeks. The benign cases are manifested by smaller bullae. Mouth lesions may or may not be present, and there may be slight or severe febrile disturbance. They may terminate in complete, uncomplicated recovery in a few weeks, or recur as a vesicular or bullous eruption, in crops, over a period of years as a true or pseudodermatitis herpetiformis. The vegetating and scar-forming varieties are fortunately rare. All of the cases have a rise of temperature at the onset or during the course of the disease.

Inoculation experiments were negative in two monkeys, a calf, several guinea-pigs and rabbits. Blood cultures from a fatal case and two recovered cases were negative under aerobic and anaerobic conditions, on agar and blood serum medium. Numerous cultures from various bullous lesions yielded ordinary staphylococci and some of them were sterile. Smears from one case showed diplococci, but the culture from this case showed staphylococci and the guinea-pig inoculated was negative. A mild or marked leukocytosis occurred early in all of the cases, continuing in two of the fatal ones and disappearing in those recovering or having a tendency to relapse. The eosinophilia appeared in the later stages, though it was not constant. The disease begins as a primary lesion, namely, the vaccination, followed by mild or severe constitutional involvement, with a multiformity of lesions involving the skin and mucous membrane, and running a short, acute, or chronic course sometimes over a period of years, and in many is fatal.

Kentucky Medical Journal, Bowling Green

September, XIII, No. 10, pp. 405-470

54 Bilateral Dermoid Cysts of Ovary. A. H. Barkley and H. G. Herring, Lexington.
55 Management of Interrupted Pregnancy. J. L. Atkinson, Campbellsville.
56 Eclampsia. C. T. Thomas, Lebanon Junction.
57 Complete and Incomplete Tonsillectomy. J. H. Hester, Louisville.
58 Physician's Faith in God. J. W. Crenshaw, Cadiz.
59 Dysentery of Ileocolitis. E. T. Riley, Trenton.
60 Inversion of Uterus; Report of Case. G. C. Rankin, Walton.
61 Pyloric Obstruction. W. A. Bryan, Nashville.
62 Skin Grafting; Report of Cases. W. Bach, Jackson.
63 Pertussis Vaccine as Prophylaxis; Report of Its Use as Such. S. C. Frankel, Louisville.
64 Some Practical Considerations in Regard to Eugenics. C. Pope, Louisville.
65 Acute Dysentery in Adult. T. E. Craig, Colesburg.
66 Typhoid. J. V. Stark, Kirksey.

Medical Record, New York

October 16, LXXXVIII, No. 16, pp. 639-680

67 Fluoroscopic Screen and Roentgenogram Plate in Diagnosis of Medical and Surgical Lesions of Alimentary Tract. C. W. Perkins, New York.
68 Excision of Fistulous Tract in Treatment of Fistula in Ano. C. Savini, New York.
69 *Treatment of Typhoid with Typhoid Vaccine Administered Intravenously. H. I. McWilliams, New York.
70 Syphilis of Lung; Report of Case. M. T. Easton, Peoria, Ill.
71 Maternal Instinct Factor in Prenatal Development of Epileptic Type of Nervous Constitution. R. G. MacRobert, New York.
72 Sustained Failure in Problem of Tuberculosis. M. E. Lapham, Highlands, N. C.

69. **Typhoid Treated with Typhoid Vaccine.**—A review of the literature by McWilliams shows that more than 550 cases treated in this manner have been reported in the literature. In more than half of these cases the disease was cut short, the patient having been saved from one to several weeks of fever. McWilliams believes that a few deaths must undoubtedly be attributed directly to the injections of vaccine. However, this is likely to occur with any new and radical method of treatment. As the contraindications and dosage are better understood, such deaths should become extremely rare. No one type of vaccine seems to possess any great superiority over other types with regard to treatment. The proper dosage for intravenous injections appears to be from 100 to 250 million bacilli. The injection of the vaccine calls forth first a marked leukopenia and several hours later a high-grade leukocytosis in typhoid patients. Variations in the number of polynuclear leukocytes are responsible for these changes, the lymphocytes remaining relatively constant. The eosinophil cells undergo an increase shortly after the injection. The various types of vaccine call forth similar changes in the blood picture.

Missouri State Medical Association Journal, St. Louis

October, XII, No. 10, pp. 433-474

73 Discrimination in Use of Methods to Produce Surgical Anesthesia. E. Fischel, St. Louis.
74 Hodgkin's Disease. G. Ives, St. Louis.
75 Progress in Obstetrics for 1914. F. T. Van Eman, Kansas City.
76 *Factors of Safety in Goiter Operations. V. P. Blair, St. Louis.
77 Surgery of Goiter. R. Hill, St. Louis.
78 Byways of Medicine. E. C. Wittwer, Mountain Grove.
79 Organization of National and Local Forces in Campaign against Cancer. C. E. Lakeman, New York.
80 *Lobar Pneumonia. O. Putman, Marceline.

76 and 80. Abstracted in THE JOURNAL, June 26, pp. 2160 and 2161.

New York Medical Journal

October 16, CII, No. 16, pp. 785-832

81 Rectal Fistula. J. R. Pennington, Chicago.
82 Exciting of Cardiac Reflex in Treatment of Enlargement of Heart and Aorta. M. Solis-Cohen, Philadelphia.
83 Acid Autointoxication Accompanying Hyperemesis of Pregnancy; Report of Case. E. E. Cornwall, New York.
84 New Growths of Prostatic Urethra in Relation to Tuberculosis; Report of Cases. P. S. Pelouze, Philadelphia.
85 Identity of Peculiar Traits and Neuroses. A. Stern, New York.

86 Creatinin as Test for Renal Function. A. K. Detwiler and M. L. Griffith, Omaha.
87 Pituitary Disease. W. Timme, New York.
88 Some Uses for Xylol in Dermatology. J. E. Lane, New Haven, Conn.
89 Obesity and Its Treatment. F. A. Cummings, Providence, R. I.
90 Schick Test. J. Zuckerman, New York.

Ohio State Medical Journal, Columbus

September, XI, No. 9, pp. 549-604

91 Thymus Gland. G. Dock, St. Louis.
92 Some Newer Conceptions of Surgery of Stomach and Duodenum. G. W. Crile, Cleveland.
93 Treatment of Enuresis by Psychotherapy. W. Ravine, Cincinnati.
94 Some Etiologic Factors in Connection with Contraction of Syphilis. H. N. Cole, Cleveland.
95 Case of Mastoiditis with Complications and Discussion of Value of Blood Cultures in Aiding Diagnosis. F. W. Alter, Toledo.
96 Should Public Schools be Closed when Epidemic Develops? F. G. Boudreau, Columbus.
97 Intra-Abdominal Injury from Slight Trauma. F. C. Herrick, Cleveland.

South Carolina Medical Association Journal, Anderson

September, XI, No. 9, pp. 271-303

98 Diagnosis of Incipient Tuberculosis. N. B. Edgerton, Columbia.
99 Consideration of Pericolic Membranes; Report of Seven Cases. J. H. Taylor, Columbia.
100 Modern Hospital Laboratory. T. R. N. Wilson, Greenville.
101 Bogie of Intestinal Autointoxication. G. M. Niles, Atlanta, Ga.

Southern Medical Journal, Mobile, Ala.

October, VIII, No. 10, pp. 833-920

102 Importance of Vital Statistics Legislation in South. W. J. Harris, Washington, D. C.
103 How Virginia Secured Place in Registration Area. W. A. Plecker, Richmond, Va.
104 Vital Statistics — Basic Principles of Organization. F. L. Watkins, Jackson, Miss.
105 Preparation Necessary for Putting into Operation Vital Statistics Law. H. H. Shoulders, Nashville, Tenn.
106 Prenatal Responsibility of Parents for Children. M. M. Carrick, Dallas, Texas.
107 Lumbar Puncture in Diagnosis and Treatment. F. H. Smith, Abingdon, Va.
108 Antituberele Serum as Aid in Treatment of Tuberculosis. T. J. West, Makaweli, Kauai, Hawaii.
109 Technic of Cystoscopy in Women. M. J. Gelpi, New Orleans.
110 Trephining for Relief of Increased Pressure of Cerebrospinal Fluid. R. M. Harbin, Rome, Ga.
111 Operative Treatment of Closed Fractures of Patella. C. M. Remsen, Atlanta, Ga.
112 *Splenectomy in Pernicious Anemia; Report of Case. C. A. Penrose, Baltimore.
113 New Technic in Administering Salvarsan. J. H. Carter, Memphis, Tenn.
114 Gasoline, Iodin and Alcohol in Surgery. J. W. Alsobrook, Plant City, Fla.
115 Impacted Watermelon Seeds in Rectum. C. E. Marlette, Hayneville.
116 *Amyl Nitrite in Chloroform Poisoning. J. S. Gilman, C. J. Devine and T. M. Barber, Richmond, Va.
117 Arthritis Associated with Infections of Nose and Throat. J. Bordley, Baltimore.
118 Vernal Conjunctivitis in Negro. D. Roy, Atlanta, Ga.
119 Straight, Direct Laryngoscopy and Esophagoscopy; Report of Cases. R. H. Johnston, Baltimore.

112. Splenectomy in Pernicious Anemia.—A review of the literature has convinced Penrose that splenectomy is of unquestionable service in selected cases of pernicious anemia. In his case while the enlargement of the spleen was a most favorable indication for operation, the lack of regenerative forms in the blood made him dubious. The fact that this patient had put forth all his power for recuperation a year before was also against him. At that time a splenectomy would possibly have been of greater value. In all cases, Penrose says, it would seem wiser to perform, as was done in this case, a transfusion of blood, from a carefully selected donor, at the time of the operation. In this patient there was practically no surgical shock, and in all probability, while the splenectomy did not save him, his life was somewhat prolonged by the transfusion.

116. Amyl Nitrite in Chloroform Poisoning.—The results obtained by the authors indicate that the inhalation of amyl nitrite definitely increased the dose of the chloroform solution required to cause the death of the animals.

Surgery, Gynecology and Obstetrics, Chicago

October, XXI, No. 4, pp. 405-540

120 *Symposium on Renal Infections. Errors in Diagnosis of Renal and Ureteral Calculus. H. Cabot, Boston.
121 *Postoperative Renal Infection. G. G. Ward, Jr., New York.
122 Renal Pain; Diagnostic and Clinical Significance. J. B. Squier, New York.
123 *Bladder Function after Confinement and after Gynecologic Operations. F. J. Taussig, St. Louis.
124 *Laboratory Diagnosis of Chronic Infections of Urinary Tract in Women. A. H. Curtis, Chicago.
125 Errors in Diagnosis of Renal Infections. A. L. Chute, Boston.
126 *Shock and Hemorrhage; Experimental Study. F. C. Mann, Rochester, Minn.
127 Left-Sided Appendicitis; Report of Case and Classification of Literature. J. H. Schrup, Dubuque, Ia.
128 Congenital Intestinal Anomalies. M. G. Sturgis, Seattle.
129 *Fibrin as Hemostatic in Cerebral Surgery. E. G. Grey, Boston.
130 Essential Uterine Hemorrhage. S. H. Geist, New York.
131 *Abderhalden Reaction in Malignant Tumors, Pregnancy and Angiosclerosis. C. Goodman and S. Berkowitz, New York.
132 Study of Irregular Kidney Vessels as Found in One Hundred and Eighteen Cadavers. R. R. Rupert, Chicago.
133 *Treatment of Hand Infections from Economic Viewpoint. H. E. Mock, Chicago.
134 *Hysterical Joint Neuroses. C. W. Rand, Chicago.
135 Carcinoma of Rectum. L. L. McArthur, Chicago.
136 Mortality and Prognosis in Operative Treatment of Cancer of Rectum. C. B. Davis, Chicago.
137 End-Results of Series of Three Hundred Operations on Gallbladder. J. J. Buchanan, Pittsburgh.
138 Gonorrheal Ureteropyelitis; Report of Two Cases Treated by Injections of Antimeningitic Serum. M. L. Boyd, Atlanta, Ga.
139 Rectovesical and Enterovesical Fistula. J. H. Cunningham, Jr., Boston.
140 Duodenojejunostomy with Exclusion of Uppermost Jejunal Loop for Angioma of Duodenojejunal Junction and Upper Jejunum. E. Beer, New York.
141 Simple and Satisfactory Closed Ether Apparatus. L. G. Bowers, Dayton, Ohio, and L. F. Ross, Richmond, Ind.
142 Technic and Experimental Application of Hard Rays for Deep Roentgenotherapy. L. G. Cole, New York.
143 Case of Intersigmoid Retroperitoneal Hernia. J. C. Black, Regina, Saskatchewan.
144 *Intra-Abdominal Use of Oxygen. G. K. Collier, Sonyea, N. Y.

120. Errors in Diagnosis of Renal Calculus.—The following rules for avoiding errors are laid down by Cabot: In all cases of abdominal pain of a chronic or recurring type, in cases of backache, lumbar or sacro-iliac joint strain and lumbago, careful repeated examinations of the urine, including a microscopic examination of the sediment in all cases whether albumin is present or not, and of a catheter specimen in all female patients, should precede positive diagnosis. In most of these cases in which the symptoms warrant the consideration of operation, roentgenograms are essential. The evidence presented by the Roentgen ray alone is insufficient to warrant operation in most cases of stone in the kidney or ureter. Possibility of error by mistaking other foreign bodies should be excluded by the use of the ureter catheter, stereoscopic plates, injected roentgenogram, or the wax-tipped catheter. In any case in which the symptoms suggest ureteral calculus and a doubtful shadow appears in the roentgenogram, if the ureter cannot be catheterized on repeated attempts or the catheter is arrested at the same point on various occasions, the decision for or against operation must be made on the apparent gravity of the symptoms. In cases with symptoms suggesting stone in the kidney, with a normal urine, a negative roentgenogram and an unobstructed ureter, the wax-tipped catheter will not infrequently lead to a correct diagnosis and will be likely to fail only in the cases in which the stone lies in a dilated calix and is therefore out of reach of the catheter.

121. Postoperative Renal Infection.—Ward believes that postoperative renal infection is more frequent than has been formerly appreciated, owing to the fact that in many cases it is overlooked on account of the mild character of the infection, the severe types being comparatively rare. Vesical irritability occurring after operation may be an important precursory sign of renal infection, and therefore should not necessarily be attributed to a cystitis caused by carelessness. Ward says that a study of the urine will show the probable type of the disease present, and thus be a guide to the treatment. He advises that a careful study of the pathologic con-

dition of the kidney should be made at the operation in order that nephrectomy may be avoided if possible.

123. **Bladder Function After Confinement.**—While there are all gradations of deficiency in bladder function after confinement and operation, Taussig says, that for practical purposes patients may be divided into four groups: 1. Those who show at such times no appreciable change from normal micturition. Those who, although able to void spontaneously, do not for a day or two empty their bladder completely. Those who require catheterization one or more times in the first few days, but are then able to void without further trouble. Those with prolonged interference of bladder function. The character and duration of the operation or labor, the form and amount of the anesthetic, the age of the patient, the nervousness of the individual and the degree of sensitiveness of her bladder mucosa, are all factors that to a greater or less degree come into play in introducing urine retention; and the object should be to regulate the therapy so far as possible in accordance with the probable factors in each case.

124. **Laboratory Diagnosis of Chronic Renal Infections.**—Curtis advises that the source of even small amounts of pus in the urine should be investigated. He believes that persistent pyuria in the absence of a gross bladder lesion is almost invariably due to kidney disease. In those frequent cases with bladder irritability which yield clear, bacteria-free urine, cultures from the traumatized urethral canal, or from introduction of a probe into Skene's ducts, may demonstrate the cause of infection. When bacteria are widely scattered or grow with difficulty, a mixture of the urinary sediment with blood followed by the making of a large number of ascites-blood-agar tubes of high dilution, results in conditions favorable for the development and isolation of the bacteria present. The chief lesions in urinary tuberculosis are usually renal. In obscure cases, laboratory diagnosis is facilitated by potassium iodid, tuberculin, kidney massage, limitation of liquids, repeated examinations of fresh specimens after high power centrifugation, Petroff's cultures, and injection of series of medium-sized guinea-pigs. Curtis is of the opinion that there is seemingly a tendency to lay undue stress on functional urinary tests at the expense of careful routine examination.

126. **Shock and Hemorrhage.**—The data from experiments reported by Mann may be summarized as follows: In a normal dog 66 per cent. of the blood can be obtained from the femoral artery and 10 per cent. from the heart, making a total of 76 per cent. which can be secured, leaving 24 per cent. in the tissues. In an animal in which the cervical cord is sectioned, producing medullary vasomotor paralysis, 54 per cent. of the blood can be obtained from the femoral artery and 12 per cent. from the heart, a total of 66 per cent., leaving 34 per cent. in the tissues. In an animal in which blood pressure is depressed practically to zero by an overdose of ether, 46 per cent. of the blood can be obtained from the femoral artery and 13 per cent. from the heart, making a total of 59 per cent., leaving 41 per cent. in the tissues. In an animal in which the viscera have been exposed until the clinical signs of shock are present, but in which the vasomotor reflexes are as active or even more so than in the normal condition, only 28 per cent. of the blood can be obtained from the femoral artery and 11 per cent. from the heart, making a total of 39 per cent., leaving 61 per cent. in the tissues.

Mann concludes that the clinical signs of shock which appear after section of the abdomen and exposure of the viscera are due to a loss of circulatory fluid. This loss of fluid is not dependent on any primary impairment of the medullary vasomotor center and takes place at a point beyond the control of the vasomotor mechanism. The causes for this loss of fluid are apparently the same as those which determine the accumulation of fluid in any other irritated area and produce the signs of inflammation. The nervous system probably plays no greater part in the former case than in the latter. The condition is made grave when the viscera are exposed because of the great vascularity of the tissues involved.

129. **Fibrin as Hemostatic in Cerebral Surgery.**—Grey suggests the use of sheep's fibrin for controlling hemorrhage in certain types of intracranial surgery. After washing the fibrin repeatedly it is allowed to stand in distilled or tap water for twenty-four hours or longer until all of the enmeshed red blood cells have been laked. After placing the fibrin (previously divided into smaller pieces) into a roomy glass jar containing normal salt solution, the mouth of the latter is covered with cotton and gauze and sterilized. The sterilization softens the fibrin and thus facilitates its absorption by the tissues. It is now ready for use. In this form the fibrin will keep for months. When dipped into a physiologic salt solution and pressed against bleeding points with a sponge or a wisp of dry cotton, fibrin was found to control the hemorrhage even better than wet cotton. The soft and pliable nature of this substance made it adhere to rough and smooth surfaces alike. The difference between fibrin and cotton in this respect was clearly shown when pledgets of each material were pressed over bleeding spots and then removed again after a lapse of a minute or two. Fibrin was found to adhere to the underlying structures much more firmly than cotton. This fact probably accounts for the more efficient hemostasis noted with the former when larger vessels were dealt with.

131. **Abderhalden Reaction in Malignant Tumors.**—In cancer Goodman and Berkowitz examined the blood of sixty-four patients. They obtained positive reactions in fifty-eight. In all of the fifty-eight patients the positive diagnosis of malignancy was confirmed later by clinical, operative, or postmortem evidence. Of the remaining six patients, three are still under observation. In a large series of pregnancy tests, the results were uniformly satisfactory. In a series of cases of angiosclerosis, the authors obtained positive reactions with artery and in several instances with suprarenal substrata. In a series of thyroid transplants they have been able in seventeen instances out of twenty-three to show positive reactions with suprarenal, and in two instances a positive reaction also with pancreas, but only one positive reaction with spleen. All of the specimens of blood taken from animals following the transplantation of organs with the use of blood vessel suture reacted positive with the substrate artery.

133. **Economic Treatment of Hand Infections.**—The treatment of hand infections, in order to give the best results from every viewpoint, Mock holds, must include the proper preventive measures, especially the prophylactic use of tincture of iodin and the early reporting of all minor injuries; the treatment of hand infections as a serious surgical condition from their inception, and whenever indicated the adoption of hospital treatment early; the proper and early diagnosis of the type and nature of infection and the exact location of the pus. Mock advises a proper incision of the abscess in order to establish adequate drainage and yet not spread the infection to other spaces.

134. **Hysterical Joint Neuroses.**—Rand's patient was subjected to sudden trauma, falling on her right hip. The obsession of some severe injury possessed her. She was unfortunately examined before a large body of physicians, in a case in which a diagnosis of fracture of the neck of the femur was made, and its symptoms, prognosis and treatment, discussed. Only after repeated negative Roentgen-ray examinations and the stormy manifestations of her hysterical attack was the condition of true joint neurosis established. The fact that function returned as soon as the patient's confidence was gained supported this diagnosis.

144. **Intra-Abdominal Use of Oxygen.**—Collier has used oxygen intra-abdominally in twenty-five laparotomies, and the results have been most favorable in all. The lessening of shock, the absence of nausea and vomiting and the early recovery from the anesthetic have been the most marked features of its use, and he has not in any case seen any untoward effects. The absorption of the oxygen is quite rapid, and even though there might be some apparent embarrassment of the respiration due to overdistention of the abdomen, Collier has never felt that this was an element of

fear, owing to the rapid absorption of the gas. The distressing postoperative results, so often seen, have been eliminated in those cases in which oxygen has been used, and Collier believes there will be a more widespread use of this valuable adjunct of the surgeon.

Texas State Journal of Medicine, Fort Worth

September, XI, No. 5, pp. 259-312

145 Geographic Distribution of Plague and Its Menace to United States. W. C. Rucker, Washington, D. C.
146 Epidemiology of Pellagra. K. H. Beall, Fort Worth.
147 Better Health in Public Schools. F. J. Slataper, Houston.
148 Trachoma; What Is It That We Should Be Mindful Of It? W. A. Rape, Victoria.
149 New and Apparently Successful Method for Therapeutic Use of Typhoid Vaccine. I. S. Kahn, San Antonio.
150 Diagnosis of Pancreatitis; Report of Cases. H. L. McNeil, Galveston.
151 Study of Venereal Diseases J. B. Shelmire, Dallas; S. J. Wilson, Fort Worth, and F. C. Walsh, San Antonio.
152 Colloidal Gold Reaction of Lange in Spinal Fluid. E. F. Cooke, Houston.
153 Syphilis and Spinal Fluid. J. J. Terrill, Temple.
154 Intraspinous Use of Salvarsanized Serum. W. L. Allison, Fort Worth.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Indian Journal of Medical Research, Calcutta

July, III, No. 1, pp. 1-204

1 *Relative Therapeutic Value in Malaria of Cinchona Alkaloids. A. C. MacGilchrist.
2 Presence of Leishmania in Peripheral Blood of Cases of Kala-Azar in Assam. F. P. Mackie.
3 New Hemogregarine Found in Pigeon's Blood. F. de Mello.
4 *Two Tests for Syphilis Dependent on Lecithin Content of Serum. H. C. Brown and K. R. K. Iyengar.
5 Simple and Convenient Water Bath for Use in Hemolytic Experiments. H. C. Brown.
6 Bursate Nematodes from Indian Elephant. C. Lane.
7 Falcaustra Falcata Investigation of Oxysoma Falcatum von Linstow, 1906. C. Lane.
8 Lepisma Saccharina (?); Its Life History and Anatomy and Its Gregarine Parasites. J. W. Cornwall.
9 Arneth's Index and Antirabic Treatment. J. W. Cornwall and S. R. Iyer.
10 Studies in Flies. Chetotaxy and Pilotaxy of Muscida and Range of Their Variability in Same Species. P. R. Awati.
11 Bacteriology of Dysentery in Madras Lunatic Asylum. M. K. Pai.
12 Malignant Melanomata; Especially Those Occurring on Heel and Sole of Foot; Report of Cases. W. H. D. Stevenson.
13 Some Anophelines from Arabia and Mesopotamia. S. R. Christophers and K. Chand.
14 Anopheles Brevipalpis Roper, and Description of Its Egg and Larva. C. Strickland.

1. **Cinchona Derivatives Inquiry.**—The main object of MacGilchrist's investigation was to determine the relative therapeutic value of the more important cinchona alkaloids and their derivatives. The five alkaloids, quinin, quinidin, cinchonin, cinchonidin and quinoidin and the two quinin derivatives, hydroquinin and ethylhydrocuprein (optochin) were examined and their relative therapeutic value was determined in the following order, hydroquinin being the most and quinoidin the least effective: (1) hydroquinin hydrochlorid; (2) cinchonin sulphate; quinin sulphate; quinidin sulphate, for all practical purposes of equal value. If any difference, cinchonin is superior to quinin and quinidin is inferior. (5) optochin hydrochlorid; (6) cinchonidin sulphate; (7) quinoidin. As regards unpleasant by-effects of these alkaloids, buzzing in the ears was most frequently associated with quinin and quinidin; amblyopia, with quinin and cinchonin; diarrhea with cinchonin if administered for over a week; and nausea with quinoidin, cinchonidin, even in large doses, caused no unpleasantness of any kind.

The first notable effect of these alkaloids is to arrest sporulation; sporulating forms are the first to disappear from the peripheral blood. Small rings and, somewhat later, half-grown parasites are the next to become rare and disappear. The last forms discoverable in the blood are full-grown schizonts and gametes. The natural protective forces of a person in relatively good health greatly aid the antimalarial action of these alkaloids. At certain stages of development the parasite is more resistant to these alkaloids than at other stages; and, to effect a complete disappearance of the parasite from the peripheral blood, the vulnerable stage in the cycle of development must be reached. It would appear that the minimal lethal doses for the vulnerable stage of the benign tertian, malignant tertian, and quartan parasites are, respectively, about 0.1, 0.15 and 0.2 gm. per 70 kilogram of patient's weight. The dosage being sufficient, the average number of hours required to cause a disappearance of parasites from the peripheral blood is roughly proportionate to the duration of the life cycle of each parasite, the number of hours required in any individual case depending on the period required for the parasite to reach a vulnerable stage in its developmental cycle.

A curious but important fact discovered in this investigation is the smallness of the dose of quinin which is able to free the peripheral blood of asexual parasites, and is possibly able to check the production of gametes. It is rare indeed in practice to give such small doses to patients. The dose usually given being, therefore, generally sufficient, or more than sufficient, in cases in which one has failed hitherto is obviously in the duration of treatment. To a patient in whom gametes have developed it would appear that quinin should be administered daily for a period equal to the life-span of the individual gamete if there is to be any prospect of curing and disinfecting that patient. If malarial patients were really cured and disinfected, malaria would become a rare disease. There is reason to believe that gametes are produced only when the asexual forms of the parasite are becoming exhausted or are exposed to inimical surroundings, as a last defense against total extermination. Ordinary doses of cinchona alkaloids have little influence on crescents when once these are fully developed in the peripheral blood; but they apparently (1) check the production of crescents if administered before these bodies have appeared in the peripheral blood, and (2) greatly shorten the period during which these bodies, having made their appearance during treatment, can be found in the peripheral blood.

Parallelism or harmony between laboratory and hospital results is marked in the case of the five natural alkaloids, quinin, quinidin, cinchonin, cinchonidin and quinoidin; but is entirely wanting in the case of the two synthetic derivatives of quinin, hydroquinin and optochin, indicating that artificial products are more liable to show differences between in vitro and clinical results, as they are not so stable as the natural alkaloids. Improvements in the manufacture of cinchona derivatives, for use in malaria, suggested by the results of this investigation, are as follows: (1) to obtain a bark containing as little quinoidin as possible; (2) to extract quinin for use as such and for the manufacture of hydroquinin; (3) to issue the remaining alkaloids as residual alkaloid, which should contain as little quinoidin as possible, but have a high percentage of quinin, cinchonin and quinidin combined.

4. **Tests for Syphilis.**—The first of the tests worked out by Brown and Iyengar is dependent on the fact that when an aqueous solution of platinum chlorid is added to an alcoholic extract of normal serum, a much heavier precipitate is produced than in the case of an extract of syphilitic serum. They have tested 230 serums by this method and have found that the results follow, with few exceptions, those obtained by the Wassermann reaction and by Fleming's modification; moreover they have found a closer agreement between their test and the Wassermann reaction than they have been able to obtain when comparing the latter with Fleming's modification. The second test is the natural consequence of the first. If one of the properties of lecithin differentiates a syphilitic from a normal serum, the other should do so also. In other words, the capacity of activating cobra venom should be different in the two serums. The authors have tested fifty-five serums by this method and consider that the results bear out the conclusions obtained by their platinum chlorid test.

Journal of Tropical Medicine and Hygiene, London

September 15, XVIII, No. 18, pp. 205-216

15 Nile Boils in Anglo-Egyptian Sudan. A. J. Chalmers and A. Marshall.

Lancet, London

September 25, II, No. 4804, pp. 683-738

16 *Treatment of Typhoid by Stock Typhoid Vaccine. H. W. Wiltshire and A. R. N. MacGillycuddy.
17 Nervous Furring of Tongue and Disturbed Taste. J. Goodhart.
18 Pleomorphism of Meningococcus. A. Lundie, D. J. Thomas and S. Fleming.
19 Neurasthenia Gastrica. J. C. McClure.
20 Case of Multiple Exostoses with Hereditary History. R. Cox.
21 Transmission of Malaria in Northern France. J. H. Dible.
22 Case of Syphilitic Nephritis Treated by Salvarsan. N. Macdonald.
23 Relapsing Febrile Illness of Unknown Origin. J. H. P. Graham.
24 Case of Influenzal Meningitis. C. V. Boland.
25 Testing of Disinfectants. S. Rideal and J. T. A. Walker.

16. **Stock Vaccine in Treatment of Typhoid.**—The cases quoted by Wiltshire and MacGillycuddy are a consecutive series of fifty in which two or more doses of vaccine were given. Seven of these patients died, giving a mortality of 14 per cent. Six of the fatal cases were complicated by severe bronchopneumonia; the seventh died from perforation which occurred at a time when vaccine had certainly reduced the general typhoid toxemia. In all cases the clinical diagnosis was confirmed by bacteriologic means. In forty the bacillus typhosus was obtained by blood culture. In seven it was isolated from the feces. The remaining three patients were uninoculated men who gave a positive Widal reaction, and in two of these the strength of this reaction was found to increase during the course of the disease.

The fifty cases are divided into classes as follows: Class 1, vaccine did harm, 6 cases (12 per cent.); Class 2, vaccine without effect, good or ill, 12 cases (24 per cent.); Class 3, vaccine did good, 32 cases (64 per cent.). Class 1: In three of these cases the harmful effect was due to doses being given with too short an interval (forty-eight hours) between them. They all recovered, the harm done being quite slight. Class 2: (a) In five cases the vaccine received a good trial, but appeared to have no effect. As regards general severity of disease, or the stage at which the vaccine treatment was started, these cases did not differ from many in which the vaccine has done good. In all of them, however, the treatment was coincident with a steady increase of bronchitis or bronchopneumonia. Class 3: Group A. Twenty-four cases (48 per cent. of the whole series) showed definite improvement which started after the first or second dose of vaccine, and was continued. Group B. Five cases (10 per cent. of the whole series) showed no improvement from the first two doses of vaccine, but were definitely improved by doses following these. Group C. In one case vaccine was not used until the later stages of the initial fever. Group D. In two cases the initial doses gave good results, but later doses (in one case the third, in the other the fourth) appeared to coincide with the beginnings of intercurrent relapses, which ran an unmodified course. The stock vaccine used was supplied by the Royal Army Medical College.

The authors urge that the treatment should be started as early as possible with an initial dose of 250,000,000. A reasonable suspicion that a patient is suffering from typhoid is sufficient indication for commencing vaccine treatment. The treatment is quite harmless to patients who may subsequently be proved not to be suffering from typhoid. An interval of three days should be given between doses. Shorter intervals are not well tolerated. When a longer interval is given, if four days the dose should not be increased, if over four days the dose should be reduced. Great care must be used in dosage if secondary infections of the lung are present. If possible, the typhoid vaccine should be combined with a vaccine suitable for the secondary infection. Doses should be continued for ten days after the temperature is normal as a preventive against relapse. Preventive inoculation exerts slight, if any, influence on subsequent vaccine treatment.

Sei-I-Kwai Medical Journal, Tokyo

September, XXXIV, No. 9, pp. 45-48

26 Report of One Hundred and Sixty-Three Cases of Uterine Fibroid. M. Yamasaki.
27 Roentgen Ray Shadow in Pulmonary and Pleural Diseases. S. Segawa.
28 Injection of Salt Solution in Tinnitus. K. Matsumoto.

Archives Mensuelles d'Obstét et de Gynécologie, Paris

August, IV, No. 8, pp. 289-336

29 *Rupture of Pregnant Uterus; Three Cases. L. Meyer (Copenhagen).
30 *Origin of Jaundice in the Newly Born. F. Bang (Copenhagen).

September, No. 9, pp. 337-368

31 Origin of Stimulus for Mammary Secretion. P. Zuloaga (Valladolid).
32 Embryologic Study of Double Monster. (Anadidyme Monocéphalien.) A. Keilin.

29. **Rupture of the Uterus During Pregnancy.**—In the three cases reported by Meyer the women had borne several children before and the pregnancy was at term or within eight weeks of term. The symptoms of the rupture were not characteristic, merely indicating some serious lesion in the abdominal cavity requiring prompt laparotomy. The only cause that could plausibly be incriminated for the rupture was a curetting of the uterus three years before in one case and, in the second, expression of a macerated six-months' fetus the year before. The tear in the uterus in both these cases was long and jagged. In the third case a small round hole was found in the fundus of the uterus, suggesting possible attempts at criminal abortion although such were denied. The round ligaments and vessels of the uterus indicated a somewhat infantile development, and this might have been responsible for the rupture. Sudden intense pain at stool was the first sign of trouble.

30. **Origin of Jaundice in the Newly Born.**—Bang's article is practically the same as the one summarized in these columns Aug. 7, 1915, p. 566.

Bulletin de l'Académie de Médecine, Paris

September 14, LXXIV, No. 37, pp. 275-306

33 Wounds of the Hands. (Considérations sur les blessures de la main par les petits projectiles et les opérations complémentaires qu'elles réclament.) E. Delorme.
34 Bradycardia from Heart Block in Boy of Nine. (Bradycardia vraie par dissociation totale auriculo-ventriculaire.) A. d'Espine and Cottin (Geneva).
35 The Paratyphoid Micrococcus n. sp. A. Sartory and P. Lasseur.
36 Localization of Projectiles in the Tissues. (100 localisations de projectiles par le compas radio-chirurgical de C. Infroit.) C. Infroit.

Journal d'Urologie, Paris

September, VI, No. 4, pp. 409-504

37 *Degenerated Condition of Leukocytes in Urine as Early and Reliable Sign of Urogenital Tuberculosis. (Signe de Colombino pour le diagnostic rapide de la tuberculose uro-génitale.) E. Micheli (Padua).
38 Fibromyoma of the Prepuce in Scar of Syphilitic Ulcer. E. A. Delfino (Genoa).
39 *Pyelography in Eighty Cases. T. Plotkin.
40 *Cancer of the Prostate; Two Cases. C. Perrier (Geneva).
41 *Access to the Kidney. (Les voies d'abord du rein.) G. Marion.

37. **Early Diagnosis of Urogenital Tuberculosis.**—Micheli expatiates on the ease, simplicity and reliability of what he calls Colombino's sign, that is, the discovery in the sediment of the urine of deformed leukocytes along with a few red cells. In two cases reported, this first suggested tuberculosis as the cause of the symptoms. No tubercle bacilli could be detected, but the polynuclear leukocytes and some of the mononuclears showed the most remarkable shapes, the edges as if gnawed and fringed. No characteristic lesions could be found, but treatment as for tuberculosis of the bladder soon brought marked improvement and examination later revealed traces of tuberculous granulations.

39. **Pyelography.**—Plotkin gives fourteen pyelograms with an accompanying description, saying that complications developed in three of the eighty cases in which he applied pyelography in Joseph's service at Berlin. One patient had severe colic after the injection of the silver salt solution, and had to be kept in bed for twenty-four hours. Another had mild colic, and in the third case there was fever and much agitation for four hours. The pyelography was done on outpatients, as a rule, and the catheter was always narrow enough to permit reflux of any excess of fluid. If catheterization causes pain or hemorrhage, no attempt should be made at pyelography. In skilful hands the latter is free from danger, he declares. It is merely a simple rinsing out of the pelvis.

40. **Cancer of the Prostate.**—The hardness of the tumor in the prostate was the only sign that suggested malignant disease in one of Perrier's two cases. In the other the cancer had softened and broken down until the palpation findings were approximately normal. In one case there were also hard presacral lymph glands. In one case there was metastasis in the corpora cavernosa. If a catheter is not tolerated, suprapubic cystostomy gives the most relief with inoperable cancer of the prostate.

41. **Modes of Access to the Kidney.**—Marion's study of the various technics for exposing the kidney is accompanied by ten illustrations.

Presse Médicale, Paris

September 16, XXIII, No. 43, pp. 353-360

42 *Extraction of Projectiles in the Lungs. G. Marion.
43 *Atypical Sunstroke. (De l'insolation.) C. Lian.
44 Experimental Pharmacologic Study of Colloidal Gold. H. Busquet.

42. **Extraction of Bullets and Scraps of Shell from the Lungs.**—Marion has been surprised at the ease with which he extracted intrapulmonary projectiles in all but one of the twenty-seven cases in which he attempted it. In the one case that failed he had neglected fixation of the lung before opening the pleura. In two cases the projectile was in a pus pocket that had opened into the air passages; in three others it was found in a pus pocket which there had been nothing to suggest beforehand. All the patients promptly and completely recovered. Each case is described in detail.

43. **Atypical Sunstroke.**—Lian reports three cases in which men working several days in the sun gradually developed the syndrome of meningeal irritation, symptoms of subacute meningitis bringing the men to the hospital by the end of the week. The intense headache, vasomotor disturbance and slowing of the pulse were accompanied by extreme depression and slight fever. The clear fluid spurted under pressure on lumbar puncture. In one case there was stupor for twenty hours and slight stiffness of the neck. Another atypical form of sunstroke was encountered in one soldier who had been digging for several hours in the sun. There was sudden and acute dilatation of the heart, with extreme arrhythmia. The man was a robust farmer and was sweating freely when attacked by this cardiac form of sunstroke. Lian tested the heart functioning in a number of soldiers known to have slight cardiovascular derangement, and found that the myocardium showed signs of weakness after prolonged exposure to the sun. Complaints of progressively increasing headache during exposure to the sun should suggest the slow meningeal form of sunstroke, while symptoms on the part of the heart call for heart stimulants, and possibly a purge, with nothing by the mouth but water at first and then milk.

Berliner klinische Wochenschrift

September 13, LII, No. 37, pp. 961-988

45 *Hemorrhagic Aplastic Anemia. (Aleukia haemorrhagica.) E. Frank.
46 *Intraneural Injection of Antitetanus Serum at First Local Symptoms. A. W. Meyer.
47 Brain Lipoid as a Hemostatic. A. D. Hirschfelder (Minneapolis).
48 Perforation of Aortic Aneurysm into the Trachea. C. Hart.
49 Localization of Projectile in Tissues. (Das Aufsuchen des Fremdkörpers durch den Arzt nach Lokalisation.) W. Salow. (Zur Röntgenstereoskopie.) W. Salow.

45. **Aplastic Anemia.**—The affection which Frank calls aplastic (aregenerative) anemia-panmyelophthisis develops as hemorrhagic purpura which continues a steadily progressive course until the patient succumbs to the anemia in the course of a few weeks or months. In 11 of Accolas' 19 cases the age was under 30; Türk's 2 patients were a girl of 18 and a boy of 12, and Kleinschmidt's patient was a girl of 4½. Frank reports in detail a case in a woman of 33. She had contracted syphilis fourteen years before but was apparently in perfect health when given an additional mild course of mercury and salvarsan. Eight days after its conclusion the hemorrhagic purpura developed and progressed to a fatal termination in fifteen days. In this, as in all the cases on record, the small numbers or total absence of blood platelets was a striking feature of the cases. The affection seems to be a primary leukomyelotoxicosis, with secondary anemia partly from the loss of blood and partly myelophthisic anemia. It is quite distinct from pernicious anemia. Without examination of the blood, the cases would usually be classed as sepsis. The "hemorrhagic aleukia," as he also calls it, opens the portals to septic infection. It may develop as an ulcerating or necrotic throat or mouth trouble; in his case there was buccal periostitis. The sepsis is merely an accident in the course of primary toxic destruction (aleukia) or overproduction (aleukemia) of myeloid tissue.

46. **Intraneural Injection of Antitetanus Serum with Local Tetanus.**—Meyer calls attention to his success in aborting tetanus by an intraneural injection of antitetanus serum into the trunk nerve of the limb, above the injury, when the slightest tendency to twitching or contracture became evident in the limb. These local symptoms long precede the systemic and general symptoms, and a prompt intraneural injection may arrest the further spread of the tetanus and restrict it to the limb involved and cure it there. He impresses on the soldiers in his charge the necessity for watching for twitching and contracture of a muscle in the limb, and the importance of immediately notifying the physician.

Correspondens-Blatt für Schweizer Aerste, Basel

September 4, XLV, No. 36, pp. 1121-1152

50 *Deforming Osteochondritis of the Hip Joint in the Young; Five Cases. G. A. Guye and H. J. Schmid. Concluded in No. 37.

September 18, No. 38, pp. 1185-1216

51 Present Status of Bacteriotherapy. J. L. Burckhardt.
52 *Sulphur Disinfection. L. Klocmann.

50. **Juvenile Deforming Osteochondritis of the Hip Joint.**—Guye and Schmid give a detailed study of four cases of what they call Calvé-Perthes' disease, with the Roentgenray findings. The children were from 4½ to 8 years old, all boys, but they encountered later a fifth case in a girl of 6. The various features of the group of cases are tabulated for comparison. In all the cleft in the joint was abnormally wide as seen by roentgenoscopy. The head epiphysis was crushed down and deformed, the epiphyseal line irregular or no longer recognizable, or studded with spots and gaps. The neck was broader than normal and curved in all but one case. The future will decide whether tuberculosis has nothing to do with the affection as at present assumed by most writers on the subject. The head epiphysis seems to pass through four stages, first a flattening out and spreading over the neck, then a splitting into two or three fragments abnormally rich in lime, then a splitting of these fragments into numerous smaller fragments which have lost their lime, and, finally, a stage in which the head epiphysis disappears, or, if lime is given systematically some of the fragments may regain their consistency and strength.

Treatment should be based on the cause, which some think is incomplete and tardy ossification; and others ascribe it to some disturbance in the local circulation. In either case weight-bearing aggravates the condition, and immobilization is the logical treatment. The affection always tends to a spontaneous cure and operative measures are not called for. Extension of the limb, keeping the child in bed, relieved the pain and the complications rapidly subsided in their experience. General measures to strengthen the organism as a whole are important aids, sun-baths and massage in particular may prove useful. The contracture of the adductors disappeared completely under a month of bed rest and immobilization by extension in one case; another patient required eight months of treatment, but all finally were clinically cured and have no perceptible limp.

52. **Improved Technic for Sulphur Disinfection.**—Klocman has found that sulphur sterilization is much facilitated by adding potassium chlorate to make it burn more readily. He mixes about four tablespoonfuls of pulverized sulphur with an equal amount of $KClO_3$ and strews this on the bottom of the vessel. The sticks of sulphur are then placed on this and what is left of the mixture is poured on paper and this is placed between the sticks and the paper lighted with a match. The whole mass then burns quickly and completely.

Deutsche medizinische Wochenschrift, Berlin

September 16, XLI, No. 38, pp. 1117-1144

53 *Hodgkin's Disease with Eruption. (Lymphogranulomatose mit pemphigusartigem Ex- und Enanthem neben granulomatösen Hautknoten.) E. Hoffmann.
54 Starch-Agar Culture Medium for Cholera Germs. (Ein neuer Nährboden für die Cholera-Diagnose.) C. Lange.
55 Treatment of Typhoid with Vaccines. H. Reiter.
56 *Uremia. H. Machwitz and M. Rosenberg.
57 Differential Percussion Findings with Subphrenic Gas Abscess. L. Nyary.
58 Chemical Sterilization of Drinking Water. (Trinkwassersterilisierung mit Chlor.) F. Ditthorn.
59 Cyclopean Monster with Snout. (Zur Kasuistik der Zyklopie mit Rüsselbildung.) S. Durlacher.
60 *The Functions of the Spleen. (Die Funktionen der Milz.) H. Hirschfeld. Commenced in No. 37.
61 The Medical Officer with the Reserve Battalion. (Der Arzt beim Ersatz-Bataillon.) Torkel.

53. **Lymphogranulomatosis.**—In the first of Hoffmann's two cases a butcher of 37 had typical Hodgkin's disease accompanied by a skin affection suggesting pemphigus and evidently of toxic origin. This assumption was confirmed by the aggravation of the pemphigus as the glandular tumors retrogressed under Roentgen treatment. With hard Roentgen tubes, 20 X, and 2 mm. aluminum filter, all the lymphomas subsided, and also the infiltration in the skin. There was a mild recurrence four weeks later. A second similar course was followed by improvement again. The patient now, four months after he was first seen, feels quite well and the glands are all normal in aspect except for slight enlargement of some in the neck and axillae. A third course of Roentgen treatment has just been instituted including the spleen also. Roentgen treatment was promptly effectual likewise in the second case. The spleen was enlarged and there was eosinophilia reaching 30 per cent. Roentgen treatment also helped in some cases of fungoid mycosis. Tuberculous lymphomas did not retrogress so fast and transient fever developed, suggesting a tuberculin reaction.

56. **Uremia.**—Machwitz and Rosenberg have examined and applied various tests in 160 cases of nephritis in the last two years. The findings and deductions all confirm the advantages of classifying the uremia with nephritis as true uremia, uremia with convulsions, and the pseudo-uremia of arteriosclerosis. As a rule these types are distinct. True uremia is found with acute glomerular nephritis, and with secondary and genuine contracted kidney. The diagnosis is based on the high urea and residual nitrogen content of the blood and the indicanemia. Restriction of the amount of albumin in the diet is desirable in this form of uremia. Uremia with convulsions occurs most commonly in acute nephritis in the young. The prognosis is generally favorable. In treatment, lumbar puncture is the most important measure at our command. Pseudo-uremia is encountered with purely atherosclerotic affections of the kidneys. It is the result of atherosclerotic changes in the brain, and is distinguished from true uremia by there being no retention of nitrogen and no indicanemia. Treatment should be addressed to the atherosclerosis, aiming to arrest the progress of the arteriosclerosis and ward off heart failure. Stimulants for the heart may be necessary, and restriction of intake of fluids. Volhard lays great stress on this reduction of the amount of fluids taken, and it has proved surprisingly effectual also in their experience. The systolic blood pressure was up to 250 mm. mercury in some of these cases, and moderate amounts of albumin and casts of all kinds were found in the urine. The necropsy findings in a typical case described showed atherosclerotic changes in the brain ample to explain all the symptoms suggesting true uremia, even the epileptiform convulsions. This patient was a woman of 47 who had swollen feet for six months, and then an attack of unconsciousness for a few minutes. Six months later there was another attack, followed by headache, disturbances in vision and recurring convulsions for fifteen minutes at a time. There was pronounced excentric hypertrophy of the left ventricle but no albuminuric retinitis. There was no indican in the serum but 3 per thousand urea in the blood. No treatment was instituted except restricting the intake of fluids, and in four weeks the patient was free from all disturbances and had no further trouble for five months. Then the heart symptoms, edema, dyspnea and convulsions returned and fatal heart failure soon followed.

60. **Functions of the Spleen.**—Hirschfeld discusses in detail the various functions of the spleen as an organ for production of blood and for destruction of red corpuscles, for iron metabolism, and as regulator of the red corpuscle production in the bone marrow, and, finally, as an organ concerned in some way with digestion. It swells and becomes full of blood at the height of the digestive process. At the same time, he adds, none of these functions is indispensable; any one of them can be promptly assumed by some other organ, and there is no appreciable general disturbance after removal of the spleen in most cases. Exceptionally, however, persons are encountered who are unable to get along without the spleen and respond to splenectomy with a severe disturbance, polycythemia.

Medizinische Klinik, Berlin

September 12, XI, No. 37, pp. 1015-1038

62 Suppurative Pneumococcus Meningitis Consequent on Pneumococcus Appendicitis and Periappendicitis. H. Eichhorst.
63 Neurology in War. (Kriegsneurologische Erfahrungen.) C. Mayer.
64 Gas Phlegmons in the Wounded. Sackur.
65 Serotherapy and Prophylaxis of Dysentery. (Zur Ruhrbehandlung.) O. Bujwid.
66 Filaria in the Blood; Three Cases. (Ueber bisher unbekannte Filariablutbefunde bei gefangenen Russen.) M. Bockhorn.

Münchener medizinische Wochenschrift, Munich

September 14, LXII, No. 37, pp. 1241-1276

67 The Foreign Body Telephone. (Das Fremdkörpertelephon.) Holzknecht and Wachtel.
68 Technic for Colloidal Silver in Therapeutics. J. Voigt.
69 Arsenic Keratosis After Injection of Salvarsan. C. Philip.
70 Psychiatry in War. (Kriegspsychiatrische Begutachtungen.) W. Weygandt.
71 *Constricting Band in Treatment of Severe Grenade and Shrapnel Injuries. (Die Stauungsbehandlung schwerer Granat- und Schrapnellverletzungen.) E. Sehrt.
72 Relapsing Fever. (Beobachtungen über Rückfallfieber.) F. Levy.
73 Trichinosis. Patter.
74 Operative Treatment for Abdominal Wounds in War. L. Basl.
75 Internal Ear Disturbance from Explosion of Shell Nearby. (Detonationslabyrinthosen.) R. Hoffmann.
76 Eczema Developing After Application of Pellidol Salve. A. Störzer.
77 Emergency Fixation and Extension with Sheets of Perforated Zinc. K. Fischel.
78 Emergency Artificial Leg. (Eine Notprothese für die untere Extremität mit Extensionsvorrichtung.) W. Katz.
79 Improved Technic for Plaster Casts of the Arms. (Zur Gipsverbandtechnik bei Schussfrakturen der oberen Extremität.) O. S. Meyer.
80 Cleaning the Hospital Trains. (Ueber Reinigung der Lazarettzüge bei der Linienkommandantur X Stettin.) Giese.

71. **Passive Hyperemia in Treatment of Shell Wounds.**—Sehrt has been much impressed with the benefit from a constricting band to the limb to induce Bier's stasis hyperemia. He has applied it in seventy-three cases of shell wounds, and found that it had an unmistakable effect in warding off general infection. It seemed particularly useful in this respect when it was applied at once after the injury, and kept up until a wall of granulations had been thrown up to protect the rest of the body. The results were particularly striking in cases of injury of large joints, even after suppuration had already set in. Preservation of function is the main advantage. The constricting band also seemed to aid in the delimitation of gas phlegmonous processes or even arrested the whole process. By the end of a few hours the pain from the lesion is abolished. The constricting band is applied in such a way that the pressure from the bandage is scarcely felt. It is left in place for six or seven days or longer, up to twelve days. The wound itself is left entirely unmolested except for a gauze covering.

Therapeutische Monatshefte, Berlin

September, XXIX, No. 9, pp. 417-532

81 Specific Treatment of Tuberculosis. (Die neueren Methoden der spezifischen Tuberkulose-Behandlung und ihre experimentellen Grundlagen.) E. Toenniessen.

82 *Relations Between Internal Diseases and Disease of the Teeth. (Ueber die bei inneren Erkrankungen vorkommenden Zahnkrankheiten.) H. Euler.
83 Present Status of Treatment of Dysentery and Similar Intestinal Disease. (Neuere Erfahrungen in der Behandlung der Ruhr und ähnlicher Dickdarmkatarrhe.) E. Stoerk.
84 *Treatment of Aphthous Stomatitis. F. Göppert.
85 *Pain at Defecation. (Behandlung des Defäkationsschmerzes kleiner Kinder.) F. Göppert.
86 *Conservative Treatment of Large Inguinal Hernia in Infants. (Grosse Leistenbrüche des Säuglingsalters.) F. Göppert.
87 Inhalation of Eucalyptus Oil in Treatment of Excessive Bronchial Secretion in Children. F. Göppert.

82. Relations Between Internal Diseases and the Teeth.—That carious teeth may serve as portals of entry for tuberculosis and actinomycosis is a familiar fact. Euler had one case in which the track from the tooth to the tuberculous granuloma could be traced by the microstope, and a complete cure followed resection of the part of the jaw through which the track passed, and excision of the diseased lymph gland. Zilz has reported finding Much's granula in putrid fistulas at the root of teeth. Diphtheria bacilli have also been found in carious teeth in otherwise healthy carriers. Neuralgic pain in teeth may develop from hyperemic pressure as a feature of the menstrual period, especially the days just preceding menses. He warns dentists not to be misled by this to pull the tooth or do more than seek to allay temporarily the congestion and pain. Similar neuralgic pains may occur in the pregnant, but the main complaint is the rapid increase of caries during pregnancy. This may be due in part to the altered metabolism, to the changes in the composition of the saliva, or to neglect of proper dental care. The women may shrink from having teeth filled for fear of possible influence on the fetus from the pain endured. Euler adds that the fetus takes what it needs from the maternal organism and leaves to the mother the task of making up any deficit. It may be that the drain on her lime deposits may render the teeth more fragile and more susceptible to caries at this time. He reiterates that it is a mistake to assume that adults do not need lime for their teeth, and particularly during pregnancy.

He presents evidence that a special influence on the teeth may be noted in acute articular rheumatism, typhoid and influenza. Snoek even speaks of "acute rheumatism of the teeth." Pulpless teeth and also intact teeth may begin suddenly to ache during acute rheumatism or convalescence, and there may be phenomena of periodontitis. This may occur also in typhoid with no local findings to explain it. It is possible, however, that neglect of the usual care of the teeth during protracted diseases may cooperate in this. The influence of influenza on the teeth is still more pronounced. Besides the neuralgiform pains, there may be suppuration in the pulp or gum below.

In all these and similar diseases, care of the mouth is of prime importance, promptly calling in the dentist when the infection in influenza spreads to involve the pulp; which usually is not until the general infection is on the decline. It may be wiser to pull the tooth than let the patient continue to suffer. Weak heart action is liable to entail stasis in the peripheral circulation, and this is particularly liable in the teeth and may cause severe toothache, which may also occur from a similar cause in arteriosclerosis. The patients may clamor to have the tooth removed, but the disturbances will not be arrested by this but are liable to be aggravated, while there is especial danger of protracted bleeding and defective healing in just such cases.

Both the first and second dentition may be accompanied by gastro-intestinal disturbances. He maintains that teeth require the supervision and care of a dentist regardless of whether they belong to the first or second dentition; also that the first teeth, even if decayed, serve a useful purpose by keeping open a passage for the tooth to follow. With organic nervous disease there may be neuralgiform pains and anesthesia or paresthesia in the cheeks, lips and tongue; the teeth may drop out spontaneously; there may be atrophy of the alveolar process and necrosis of the jaw. In Misch's work on the borderland between medicine and dentistry he cites authorities to show that there is a possible connection between disease of the teeth and insanity; we know that cretins often have deformed teeth. Alveolar pyorrhea seems to require both a local irritation and a predisposition. Besides the dentist's treatment of the condition, the physician should attack the underlying predisposing factors.

84. Treatment of Aphthous Stomatitis.—Göppert thinks that the main point in treatment is to anesthetize the inflamed and sensitive mucosa so as to permit the child to eat. They often shrink from eating and even drinking until they actually suffer from inanition. He advises dusting the inside of the mouth with some anesthetic powder, without direct contact, as the child reclines, repeating this five or ten minutes before each meal and also at night if the pain keeps the child awake. Suggestion may be necessary to eliminate the child's fear that chewing or drinking will hurt.

85. Pain at Defecation.—Göppert introduces into the anus a suppository containing about 0.02 gm. of some mild anesthetic. This renders defecation painless whether the pains are due to actual organic lesions or merely the memory of such. After five or six days the suppository can be of plain cocoa butter. This treatment has always proved promptly effectual in his experience.

86. Inguinal Hernia in Infants.—Göppert does not approve of herniotomy for infants, and says that it is unnecessary as a rule. The hernia can be kept reduced and the elastic tissues soon practically close up the opening if a perineum X bandage is applied. It must be flannel or cambric, not gauze. The pressure can be increased by interposing a pad of cotton. The bandage can be changed once or twice a day. It answers the purpose as well for very large as for small hernias.

Zentralblatt für Gynäkologie, Leipzig

September 11, XXXIX, No. 37, pp. 651-666

88 *Appendicitis in the Pregnant. (Zur Kenntnis der echten Typhlitis und Perityphlitis in der Schwangerschaft.) R. T. Jaschke.

September 18, No. 38, pp. 667-682

89 Organotherapy of Amenorrhea. R. Köhler.

88. Appendicitis in the Pregnant.—Jaschke's case emphasizes anew that the high mortality of appendicitis in pregnant women is due to fatal temporization, the result of the fact that pregnant women shrink exceptionally from operations. When they at last accept the intervention, conditions then are beyond repair.

Gazzetta degli Ospedali e delle Cliniche, Milan

September 19, XXXVI, No. 63, pp. 977-992

90 *Nervous Disturbances in the Tuberculous Without Direct Nerve Lesions. (Alterazioni nervose da tubercolosi extra-nervosa.) S. Mircoli.
91 Interval Before Development of Traumatic Appendicitis. (Circa i termini di tempo assegnati allo sviluppo dell'appendicite traumatica.) N. Federici.

90. Nervous Disturbances in Tuberculosis.—Mircoli discusses the nervous symptoms induced by the systemic intoxication and as reflexes from tuberculous organs. The old idea that the disease first starts in the apex has been long abandoned. The nervous system may be suffering from the action of toxins, generated in the primary focus, in lymph glands or serosa, long before the apex is involved. The nervous disturbances therefore may be among the earliest signs of tuberculosis. He relates the details of two cases of apparently ordinary neurasthenia in young men. The progress of the cases, however, revealed that the symptoms of the neurasthenia were the work of tuberculosis toxins, as a latent tuberculous focus became evident later. In another case a young woman had attacks of vomiting. The vomiting kept up for a week or so and then all was normal again for a month or two, but then the vomiting returned as before. Nothing could be found to explain it until, eighteen months later, a torpid tuberculous process became evident in one apex. Another patient had repeated hemorrhages from the air passages, stomach, nose and ear. Hysteria was incriminated until a tuberculous focus in the lung manifested its presence. In all such cases the active tuberculosis masquerades as simple neurasthenia or hysteria.

Another early sign on the part of the nervous system is the increased sensitiveness of the tissues on the side affected. Gasperini and Goldmann have established the connection between local hypersensibility (skin, muscles, bones and joints) and the site of a tuberculous lesion. The local muscle reactions are also liable to be exaggerated. This is most evident in the pectoralis and sternocleidomastoid muscles, as a rule. Neuritis, a tendency to polyneuritis, may be the first manifestation of a latent tuberculosis. In such cases the neuritis generally develops insidiously and affects the nerves connected with the pectoralis, deltoid, biceps or bronchial musculature. While the nerve trunks involved may present signs of inflammation or degeneration, the muscles between which they pass respond normally to all tests. This is a special feature of tuberculous nervous derangement. The spinal cord and the brain may suffer likewise from the tuberculous toxins, and the sexual organs may be abnormally stimulated while the normal inhibitions become less evident. He cites experimental data and observations on cattle testifying to the exaggerated erotic state liable to be induced by incipient tuberculosis.

There does not seem to be any parallelism between the extent of the tuberculous focus and the nervous disturbances. In fact, the latter are generally most pronounced in the earliest phases and in the walled off, sclerogenous, rather benign foci. The toxins in the closed foci are all taken up by the blood or lymph and none are cast off, as with an open lesion. Esquirol has recently reported that in the tuberculous insane, in his asylum, the mental derangement grew worse as the local tuberculous affections improved and vice versa.

Policlinico, Rome

September 26, XXII, No. 39, pp. 1298-1332

92 Psychologic Examination of Recruits. (Per l'applicazione di esami psicologici nell'esercito.) U. Loreta.
93 Chemical Sterilization of Drinking Water. (La purificazione dell' acqua con il cloruro di calce.) D. Ottolenghi.

Riforma Medica, Naples

September 25, XXXI, No. 39, pp. 1065-1092

94 Echinococcus Cyst in the Brain of Young Man Causing Cerebellar Syndrome and Paranoid Dementia. C. Todde.

Mitteilungen a. d. med. Fakultät der k. Univ., Tokyo

XIV, No. 1, pp. 1-216. German Edition. Last indexed July 24, p. 370

95 Antipyretic Action of the Earth-Worm. (Ueber die antipyretische Wirkung des Regenwurms und dessen wirksamen Bestandteil.) S. Nukada and B. Tanaka.
96 The Hair of the Chinese. (Rassenanatomische Untersuchungen an Chinesen. I.) T. Kubo.
97 Toxin of Silk-Worm Bacilli. (Ueber das Toxin von sog. Sotto-Bacillen.) K. Aoki and Y. Chigasaki.
98 The Precipitation Reaction in Silk-Worms. (Präzipitationsreaktion bei Seidenraupen.) K. Aoki.
99 Physiologic Fluctuations in Sugar Content of the Blood. K. Sakaguchi, T. Kasai and Kinyosai.
100 Lipoids in the Nerve and Glia Cells and Vessel Walls in the Central Nervous System. F. Shionoya.
101 Microscopic and Microchemical Study of Vegetable Detritus in Excrements of the Japanese. K. Kyuno.

Brasil-Medico, Rio de Janeiro

September 8, XXIX, No. 34, pp. 265-272

102 Profuse and Repeated Hematemesis from Varices in Esophagus and Stomach of Liver Origin. J. Froes. Commenced in No. 33.
103 The Leishmanioses in South America. (Subsidio para o estudo da physionomia clinica, classificação e synonymias das leishmanioses na America do Sul.) A. A. da Matta.

September 22, No. 36, pp. 281-288

104 The Flagellate Parasites of Mammals in Brazil. II. (Um novo parasito do homen.) R. da Fonseca.
105 *Nodular Mycosis of the Hair; Fourteen Cases. (Considerações sobre a piedra.) O. Torres.

105. **Nodular Mycosis of the Hair: Piedra.** — Torres describes this parasitic infection of the hair which attacks the young by preference, forming minute gritty nodosities along the hairs of the affected scalp. All his patients were promptly cured by application of a 5 per cent. alcoholic solution of salicylic acid after bathing or washing the hair. The alcohol cuts out the grease and as it evaporates the acid is deposited in a fine powder on the nodules. It never seemed to injure the hair in any way. Cultures of the parasite kept their virulence up to five months in his experiments.

Russkiy Vrach, Petrograd

XIV, No. 31, pp. 721-744

106 *Bacillus Pyogenes Albus Diphtheroides (Pseudodiphthericus) in Suppurating Gunshot Wounds. A. D. Pavlovsky.
107 *Poisoning from Asphyxiating Gases. N. A. Beloff.
108 Lead Deposits in Conjunctiva. A. I. Pokrovsky.
109 Lysoform in Erysipelas. V. A. Izvolskaya.

No. 32, pp. 745-768

110 *Experimental Chancroid in Rabbits. V. I. Terebinsky.
111 Foreign and Russian Mineral Waters. O. V. Verbitzky.
112 Influence of the Position of the Limb upon the Nerves in Gunshot Wounds. K. T. Wegner.

No. 33, pp. 769-792

113 *Early Signs of Exophthalmic Goiter. N. M. Popoff.
114 Suture of Vessels in Treatment of Aneurysms in the Present War. L. G. Stukkey.
115 *Bacteriology of Typhus Fever. M. S. Milman.
116 *Primary Carcinoma of the Lungs. A. V. Lavrinovich.
117 Ear Lesions from Military Causes. B. I. Khoronjitzky.
118 Hard Chancre of the Lids. A. G. Dmitrieff.
119 *Tincture of Iodin in Internal Medication. M. A. Zaussailoff. Commenced in No. 21.

106. **Pus-Generating Diphtheroid Bacillus.**—In 200 cases of various suppurations in wounded soldiers Pavlovsky found the pyogenes diptheroid bacillus in 6 per cent. in pure cultures, and in 6 per cent. mixed with staphylococci. The microbe in question he described in 1909. It is usually located outside the cell; stains with the Gram, and resembles a diphtheria bacillus recently cultivated. It grows on agar in twenty to twenty-four hours at 35 C. and on Loeffler's serum, and does not liquefy gelatin. Guinea-pigs injected in the abdominal cavity with 1 c.c. of the bouillon culture died within from thirty-six to fifty-two hours, and the cultures from their liver and blood gave on Loeffler's serum the same diphtheroid cultures. Clinically there is suppuration with formation of grayish or whitish-gray pus, moderate fever (102 C.), and occurrence of fistulas, but the infection seems to be rather localized, the symptoms of systemic or general infection being mild. The prognosis is therefore good. Pavlovsky thinks that this microbe should be added to the group of those considered as the primary cause of suppuration.

107. **Gas Asphyxiation in War.**—Beloff treated fifteen soldiers poisoned with asphyxiating gases who came under his care four days after the onset of the poisoning. The symptoms were those of bronchitis (cough and slight dyspnea), accompanied by headache and loss of consciousness. The cases were rather mild; there were no blood changes, but the skin was dry and the conjunctiva pale. In one case only was the conjunctiva hyperemic. The heart beat was accelerated (96 per minute); the sounds were dull, with the second pulmonic accentuated. The appetite was poor, the temperature normal. Digitalis gave better results than expectorants, Dover's powder, etc.

110. **Experimental Chancroid in Rabbits.**—Terebinsky succeeded in inoculating rabbits in the scrotum with chancroid. Only those inoculations proved successful in which he artificially temporarily prevented phagocytosis. This he accomplished by causing on the animal's abdomen an artificial irritation with tincture of iodin. A small piece of gauze soaked in the latter was passed underneath the skin, after two cutaneous incisions had been made at a short distance from each other, so that the gauze passed from one incision to the other. The bacteriologic and microscopic examinations both showed that the inoculations were successful. The inoculation chancroids on the day following the inoculation showed very small bloody scabs, surrounded by slight redness or without any reactive changes. Pus was occasionally present. A typical chancroid showed on the fifth day, containing numerous streptobacilli. The latter are taken up by the nuclear leukocytes, marked phagocytosis thus taking place. By the eighth day the process of repair was in evidence and healing was complete by the tenth day in some. In others it took nineteen days to heal, the average having been two weeks.

113. **Early Signs of Exophthalmic Goiter.**—Popoff found in 33 per cent. of his cases of Graves' disease a sign which much resembles Graefe's sign. When the patient's eye is fixed at an elevated object which is gradually lowered, the eyeball and the lid normally move synchronously. Early in exophthalmic goiter, however, the upper lid becomes very irregular in its movements. It either gets ahead of the eyeball or lags behind. In some cases this lack of parallelism is to be observed only in the very beginning of the experiment, disappearing after repeated trials, which are followed by perfectly normal movements. Popoff looks on the described sign as a forerunner of Graefe's sign.

115. **Bacteriology of Typhus.**—Milman, discovered in the blood of soldiers sick with typhus fever a diplobacillus which was nonmotile, Gram positive, and did not coagulate milk, or form indol, or ferment grape sugar, and did not split milk sugar. Inoculation of rabbits gave positive results, and the same diplobacillus was found in the blood and tissues. The twenty-four hour bouillon culture was injected hypodermically into a guinea-pig and rabbit. The former remained alive but developed an abscess on the spot of the inoculation, in which the diplobacillus was found in pure cultures. Cadavers also showed its presence. The agglutination test was hard to carry out in many cases, but it proved positive. Milman proposes to call the described microbe, the streptococcus exanthematicus because it very much resembles an ordinary streptococcus with the acquired property of inducing typhus fever pyemia.

116. **Primary Cancer of the Lung.**—In the course of 16,047 autopsies performed in one of the large hospitals of Petrograd, during the last ten years, primary carcinoma of the lungs was found sixty-one times, that is, in 0.38 per cent. Of the total cases of carcinoma the rate was 3.7 per cent. The age was from 45 to 60, the male sex prevailing (forty-two men, nineteen women). In about 46 per cent. there were no metastases. The correct diagnosis was made only in nineteen out of the sixty-one cases, the disease having been mistaken usually for pulmonary tuberculosis. The latter, however, was found frequently combined with carcinoma. Other diseases which were diagnosed instead were pleurisy, pneumonia or aortic aneurysm. The reason of the mistaken diagnosis was metastasis in the tracheal, bronchial, or clavicular glands, in the liver, kidneys, etc., which complicated the clinical symptoms, overshadowing those of the primary cancer in the lung. This was especially the case with secondary carcinoma of the liver and the stomach. The clinical signs of pulmonary carcinoma are usually cough, pain in the chest and dyspnea entirely out of proportion to the physical findings and very severe. Pleurisy with effusion was found with pulmonary carcinoma in 26.2 per cent. In eight cases it was hemorrhagic, in three purulent, and in five fibrinous. The temperature was elevated in half of the cases. The best diagnostic aid proved to be roentgenoscopy.

119. **Iodin Internally in Place of Potassium Iodid.**—Zaussailoff warmly recommends tincture of iodin as a substitute for potassium iodid in diseases like syphilis, rheumatism, gout and obesity. The dose is one drop given three times a day, and is daily increased by one drop to a dose. In many cases fifty drops were given three times a day without any of the by-effects which are so common with potassium iodid, and without any gastro-intestinal irritation. He used it in 352 cases, and gives detailed reports of twenty-four cases.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

September 11, II, No. 11, pp. 1399-1470

120 Early Symptoms of Organic Disease of the Central Nervous System. (De beginverschijnselen der organische zenuwziekten.) L. Bouman.

121 Food Value of Bran. (De voedingswaarde en het dietetisch gebruik van zemelen.) E. C. van Leersum.

122 *Heart Block in Exophthalmic Goiter. (Een zeldzame stoornis in de hartwerkzaamheid bij morbus Basedow.) D. de V. Reilingh.

September 18, No. 12, pp. 1471-1558

123 *Is Amenorrhea Necessary for Diagnosis of Extra-Uterine Pregnancy? G. C. Nijhoff.

124 Measurement of Small Amounts of Sugar in the Urine. (Over de bepaling van kleine hoeveelheden suiker in urine.) S. Nagasaki (Japan).

125 Acute Yellow Atrophy of the Liver and Functional Tests of the Liver. (Acute gele leveratrophie en functioneele leverdiagnostiek.) C. L. de Jongh.

126 Radiotherapy in Gynecology. (Stralenbehandeling bij ziekten der vrouwelijke geslachtsdeelen—een aanwinst.) N. J. A. F. Boerma.

127 *Intoxication from Adalin. A. Nieuwenhuijse.

122. **Heart Block with Exophthalmic Goiter.**—The patient was a woman of about 45 who had long presented symptoms of exophthalmic goiter when signs of heart block became evident, and there were also indications of Adams-Stokes disease. The effect of treatment is discussed and also the light thrown possibly on etiology of each of these three affections by their coincidence in this case.

123. **Amenorrhea and Extra-Uterine Pregnancy.**—Nijhoff relates some convincing clinical experiences which demonstrated that an extrauterine pregnancy may be under way and rupture occur, even when the interval since the last menstruation is less than four weeks.

127. **Adalin Poisoning.**—Called to a young man absolutely unconscious, Nieuwenhuijse found symptoms like those of veronal poisoning, and an empty box that had contained adalin powders. The young man recovered under saline subcutaneously, stimulants and clearing out the stomach and bowels, but the symptoms were very severe while they lasted. The unconsciousness persisted for nearly sixty hours. The dose had been about 3 gm., namely, ten powders of 0.3 gm. each. It was taken on a friend's advice to relieve insomnia.

Ugeskrift for Læger, Copenhagen

September 23, LXXVII, No. 38, pp. 1509-1544

128 *Syphilitic Cardiovascular Disease. (Syfilitiske Hjertesygdomme.) A. Øigaard. Commenced in No. 37.

129 Treatment of Laryngeal Tuberculosis in Sanatoriums for Pulmonary Tuberculosis. T. Begtrup-Hansen.

128. **Syphilitic Cardiovascular Disease.**—Øigaard reports in detail fifteen cases of aortitis or myocarditis or both in persons known to have had a history of syphilis at some time. The Wassermann reaction was negative in ten and weakly positive in five. Treatment with heart tonics, iodid, morphin, etc., had given no relief, but all were benefited and some apparently cured by treatment for the syphilis. The lack of improvement under the usual measures first gave the clue to the syphilitic nature of the trouble. He has long warned that the symptoms of syphilis may subside before the Wassermann reaction becomes negative, and, on the other hand, that symptoms may recur later without the Wassermann accompanying them. The reaction-free recurrence requires treatment just the same as if the Wassermann were positive. He found further that by using twice or four times the amount of serum, it sometimes was possible to obtain a positive Wassermann reaction when otherwise it was constantly negative. In his group of fifteen cases, those with a positive Wassermann all had myocarditis. In a total of thirty-five cases the most intense reaction was in the patients with aneurysms; next came the cases with aortic insufficiency, then myocarditis cases with a weak reaction, and then the pure aortitis in which group all the cases were negative. In conclusion he says that treatment of syphilitic cardiovascular disease is not difficult, and the results may be more gratifying than in almost any other field.

Upsala Läkareförenings Förhandlingar

February 20, XX, Nos. 3-4, pp. 125-270. Last indexed Jan. 23, p. 380

130 Epidemiologic Research in Sweden. G. Wirgin.

131 Action of Maltase. A. Oehman.

132 Anatomy of the Senile Ovary in Rabbits. (Bidrag till ovariernas åldersanatomi hos kaninen.) M. Valberg.

133 *Innervation of the Thymus. A. Sjölander and A. Strandberg.

134 Curve of Acetone in Experimental Acidosis. G. Bergmark.

133. **Innervation of the Thymus.**—Six colored plates are given showing the anatomic conditions in regard to the nerves in the thymus region as examined on six human fetuses nearly at term. The innervation is double, and fibers from several nerves pass to the thymus.